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ABSTRACT

Because undergraduate education is the foundation for graduate studies, it is important to know where our Nation's science and engineering (S&E) doctorate recipients are receiving their undergraduate training. Specifically, this report addresses the following broad questions: (1) What are the undergraduate origins of S&E doctorate holders? (2) Which educational institutions contribute most to the undergraduate education of recent S&E doctorate recipients? (3) What proportions of S&E doctorate holders earned their baccalaureate at a doctorate granting institution? (4) What roles do the various baccalaureate-origin institutions play in S&E predoctorate education? (5) What role do two-year colleges play in the undergraduate education of persons who later earn an S&E doctorate? and (6) Are the top-ranking baccalaureate institutions of women and racial/ethnic minorities the same as those of men and whites? (PR)

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Undergraduate Origins of Recent Science and Engineering Doctorate Recipients

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Undergraduate Origins of Recent Science and Engineering Doctorate Recipients

December 1992

Principal Author: Susan T. Hill
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Foreword

Baccalaureate institutions are an essential part of the educational process for persons earning science and engineering (S&E) doctorates. This report summarizes data on the baccalaureate institutions reported by persons completing doctorates from 1985 through 1990. It provides an institutional context for examining this aspect of the educational pipeline.

Kenneth M. Brown
Director, Division of
Science Resources Studies

December 1992

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I. Introduction

Currently, only about 300 universities in the United States provide doctorate-level education in science and engineering (S&E), but other institutions provide students their foundation in science or engineering:

- Almost 1,400 4-year colleges that offer undergraduate S&E degrees;
- About 1,300 2-year schools that offer S&E instruction and/or training in S&E technologies;
- Over 20,000 high schools that provide mathematics and science courses; and
- Numerous high schools, colleges, and universities in foreign countries that educate the many students who came to the United States for their graduate degrees.[1]

Given their significance, these institutions have been studied and reported on for over 50 years (see appendix C, Bibliography).[2] This report provides additional knowledge, focusing particularly on those institutions that awarded baccalaureates to students who later received doctorates in S&E fields.

Overview

Because undergraduate education is the foundation for graduate studies, it is important to know where our Nation's S&E doctorate recipients are receiving their undergraduate training. Specifically, this report addresses the following broad questions:

- What are the undergraduate origins of S&E doctorate holders?
- Which educational institutions contribute most to the undergraduate education of recent S&E doctorate recipients?
- What proportion of S&E doctorate holders had earned their baccalaureate at a doctorate granting institution?
- What roles do the various types of baccalaureate-origin institutions play in S&E predoctorate education?
- What role do 2-year colleges play in the undergraduate education of persons who later earn an S&E doctorate?
- Are the top-ranking baccalaureate institutions of women and racial/ethnic minorities the same as those of men and whites?

These and related questions are explored in this report.

Definitions

Recent doctorate recipients are defined as persons who earned doctorates in S&E fields from U.S. universities in the academic years ending in June 1985 through 1990. Doctorate recipients in these six years were combined into one cohort, or unit of analysis, to minimize the possibility of overemphasizing any unusual circumstances from any single year.

The S&E fields of study, as defined by the National Science Foundation (NSF), include the natural sciences (physical sciences, biological sciences, mathematics, computer sciences), social science/psychology, and engineering. The specific fields are listed in table 1 in Appendix B, Detailed Statistical Tables. Note that engineering technology and medical degrees are not included.

A baccalaureate-origin institution is defined as the college or university from which an S&E doctorate recipient had earned a bachelor's degree. Excluded are any other undergraduate institutions that the student may have attended before receiving a baccalaureate.

The Carnegie Classification of Institutions was used to group types of institutions for this analysis.

[1] Data on numbers of institutions are from the National Center for Education Statistics, *Digest of Education Statistics 1989* (Washington, D.C.: Supt. of Documents, U.S. Government Printing Office, 1990) p. 12.

[2] Many of the reports cited in the Bibliography focus on the "productivity" of baccalaureate institutions (i.e., the proportion of the total bachelor's degree recipients from that institution, or group of institutions, who go on to earn doctorates within a certain time frame). This approach adjusts for institutional size to some extent.

The Carnegie Commission on Higher Education has periodically (1970, 1976, and 1987) classified institutions of higher education in the United States by the range of programs and/or degrees offered, enrollment size, and amount of Federal funds received for research. A modified version of the 1987 Carnegie Classification is used in this report to study the baccalaureate origins of scientists and engineers who recently received their doctorate from U.S. institutions. See Appendix A, Technical Notes, for more detailed information.

Source of Data

The source of the data used in this report is the Survey of Earned Doctorates (SED), awarded in the United States. The survey questionnaires are completed by approximately 93 percent of all doctorate recipients as they finish the requirements for their degree. A detailed description of the survey and possible sources of error are provided in appendix A, Technical Notes.

II. Undergraduate Origins in Foreign Institutions

Most recipients of S&E doctorates from U.S. universities also receive their undergraduate education at U.S. institutions. Foreign institutions do, however, play a significant role. Therefore, at the beginning of this section, brief consideration is given to the extent to which foreign institutions have provided the undergraduate education of S&E doctorate recipients. Baccalaureate origins in U.S. institutions are then treated in more detail.

Universities in the United States and other major Western nations house advanced training facilities and employ distinguished scholars. Consequently, many students from foreign countries come to the United States to obtain graduate S&E training. Given the international nature of the scientific and technological community, it is not surprising that over one-quarter of all recipients of S&E doctorates awarded by U.S. universities had received their baccalaureates from foreign institutions.

Impact of Foreign Students

In graduate schools of engineering, faculty often teach students who have been educated outside the United States. What is the impact of large numbers of students from foreign countries in the classroom? A recent report, *Boon or Bane*, determined that faculty "did not to any great extent take the national composition of their graduate students into account in defining the content of the subject matter to be taught." The authors reported that the baccalaureate educational background of foreign students "provides in many instances a high level of theoretical sophistication." In terms of communication, however, almost half of faculty reported they had "made special efforts to accommodate the foreign students' difficulties in oral comprehension."[3]

[3] Robert Morgan and Elinor Barber, *Boon or Bane* (New York: Institute for International Education, 1988).

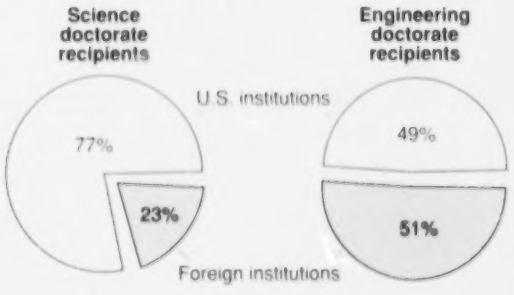
Role of Foreign Institutions by S&E Field

Considerably more engineering doctorate holders received their undergraduate education in foreign institutions than did science doctorate holders: 51 percent versus 23 percent (chart 1). In several science fields, however, the proportion of foreign baccalaureate holders was significantly higher than the average: Mathematics (47 percent), computer science (42 percent), agriculture (37 percent), physics (36 percent), and social science (31 percent) (table 1 in Appendix B.).

Foreign Citizen Scientists and Engineers (S&Es) Who Earned Both Baccalaureate and Doctorate in the United States

Most foreign citizens who earned S&E doctorates in the United States completed the lower levels of educa-

Chart 1.
U.S. versus foreign baccalaureate origins of recent science and engineering doctorate recipients



NOTE: See Technical Notes for more information on the Carnegie Classification

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates for the years 1985-90.

tion in their native countries. Some foreign S&E doctorate holders, however, had received not only their doctorate in the United States, but also their baccalaureate. As would be expected, a higher proportion of foreign S&E doctorate recipients with permanent resident visas than with temporary visas (29 versus 7 percent) had earned their baccalaureate in U.S. institutions.

Among foreign citizens who received their S&E doctorate in the United States, those of certain countries had high proportions who also earned their baccalaureate in the United States. Colombia, Caribbean Islands, West Germany, Hong Kong, Iran, Lebanon, and Nigeria had high proportions of S&E doctorates who received all of their college education (baccalaureate through doctorate) in the United States (table 2). Reasons for those high proportions vary by country and include foreign government programs promoting mobility as well as the unavailability of comparable programs in the home countries.

III. Undergraduate Origins by Type of U.S. Institution

Recent S&E doctorate recipients cited approximately 1,400 U.S. institutions as the sources of their baccalaureates. These institutions constitute almost three-quarters of the Nation's approximately 2,000 colleges and universities that award bachelor's degrees.

Nationally Prominent Institutions from Which S&E Doctorate Recipients Had Received Baccalaureate Education

Twenty-five U.S. institutions were especially prominent among those that granted baccalaureates to students who eventually earned their S&E doctorate. Together, the 25 institutions accounted for the baccalaureate education of almost one-quarter of those persons who received S&E doctorates in the United States between 1985 and 1990 (table 3). Individually, each of the 25 top-ranked institutions had provided the undergraduate education of at least 500 graduate students who received their S&E doctorate in that period.

The University of California at Berkeley was by far the largest provider of undergraduate education of recent S&E doctorate recipients, followed by Cornell University, University of Illinois at Urbana, and University of Michigan (table 3).

All institutions that provided the baccalaureate education of 10 or more recent S&E doctorates are listed in Appendix B, table 17.

Carnegie Classification of U.S. Institutions by S&E Field of Study

A modified Carnegie Classification system was used in this report whereby the 4-year institutions in the United States that awarded baccalaureates were grouped into the following categories:

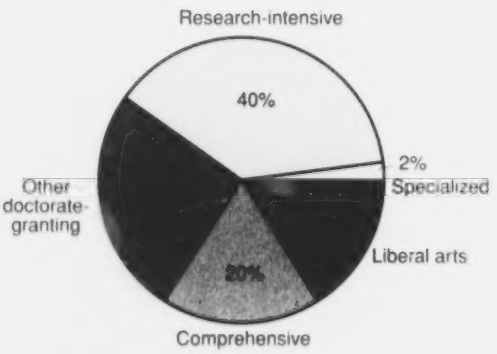
- Research-intensive institutions (number=70),
- Other doctorate-granting institutions (number=138),
- Comprehensive institutions (number=568),
- Liberal arts institutions (number=518), and
- Specialized institutions (number=177)

Appendix A, Technical Notes, provides detailed information on these Carnegie Classification groups.

Table 4 provides an overview of the role of each type of Carnegie Classification group in the baccalaureate origins of S&E doctorates by field of study.[4] The 70 research-intensive institutions awarded 40 percent of the bachelor's degrees of S&E doctorate recipients, and the 138 other doctorate-granting institutions awarded another 25 percent (chart 2). Altogether the 208 institutions that offer doctoral S&E programs accounted for 65 percent of the **baccalaureate origins**

[4] Note that field of study refers only to the field of the doctorate. Changes in field of study from the baccalaureate to the doctorate do occur; see Susan T. Hill, *Science and Engineering Doctorates: 1960-90* [NSF 91-310 Final] (Washington, D. C.: National Science Foundation, 1991), pp. 165-66.

Chart 2.
Baccalaureate origins in U.S. institutions of recent science and engineering doctorate recipients, by Carnegie Classification of Institutions



NOTE: See Technical Notes for more information on the Carnegie Classification

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates for the years 1985-90

of S&E doctorate holders (chart 2). This is somewhat higher than the proportion of S&E **bachelor's degrees** awarded (56 percent) that doctorate-granting institutions accounted for in 1988.

The role of each Carnegie group in the baccalaureate-origins of recent S&E doctorate holders differed markedly depending on the S&E field of doctorate awarded. For example, research-intensive institutions provided the undergraduate education of over half of the recent doctorate recipients in chemical, electrical, and mechanical engineering and in physics. But these institutions awarded baccalaureates to only 29 percent of recent chemistry doctorate recipients, who tended to have their baccalaureate origins in comprehensive and liberal arts institutions (table 4).

The following sections describe baccalaureate origins for S&E doctorates for each of the five kinds of institutions. A list of the top 25 (or 24, 23, etc, depending on an even break-point for number of degrees) institutions within each Carnegie Classification group is also provided in Appendix B. The role of 2-year institutions is also discussed.

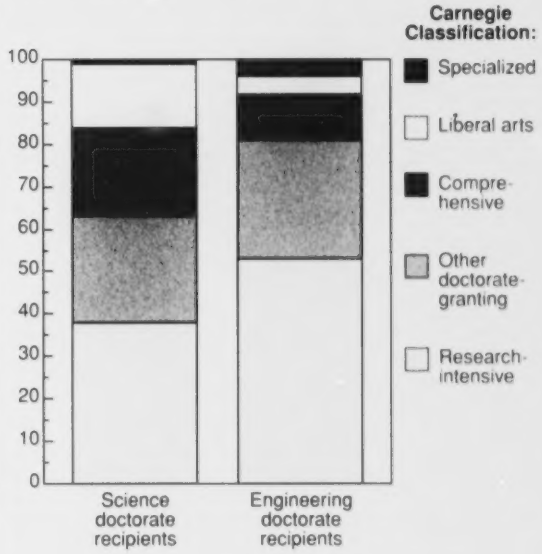
Role of Research-Intensive Institutions in the Baccalaureate Education of S&E Doctorate Recipients

The 70 research-intensive universities led other institutions both in the amount of Federal support received for research and in the range of doctoral programs offered. Research-intensive institutions played a central role in undergraduate S&E education, having provided the baccalaureate education of 40 percent of recent S&E doctorate holders.

Fifty-three percent of recent engineering doctorate recipients had earned their bachelor's degree at research-intensive universities; the comparable figure for science doctorate recipients was 38 percent. Scientists with recently acquired doctorates were more likely than their engineering counterparts to have earned their bachelor's degrees at comprehensive or liberal arts institutions (chart 3). The prominence of research-intensive institutions varied by field, however, as shown in chart 4.

Of the 25 top-ranked baccalaureate institutions from which S&E doctorate holders had earned their baccalaureate (table 3), 24 were classified as research-intensive; the remaining institution, Iowa State University, was the only one classified as an "other" doctorate-granting university. The top 25 research-intensive institutions differ from the general ranking of top 25 baccalaureate institutions nationally only in the substitution of SUNY at Stony Brook for Iowa State University. Table 5 lists the top 25 research-intensive institutions; together, these accounted for

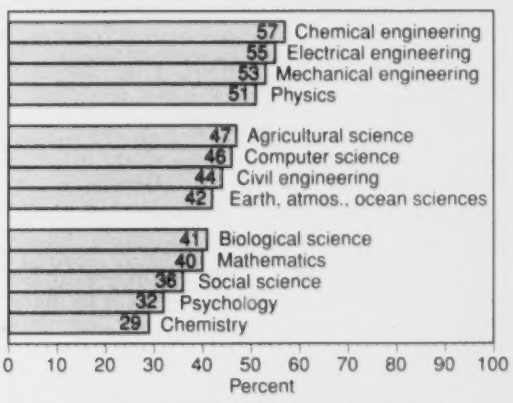
Chart 3.
Baccalaureate origins in U.S. institutions of recent science and engineering doctorate recipients, by Carnegie Classification of Institutions



NOTE: See Technical Notes for more information on the Carnegie Classification

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates for the years 1985-90.

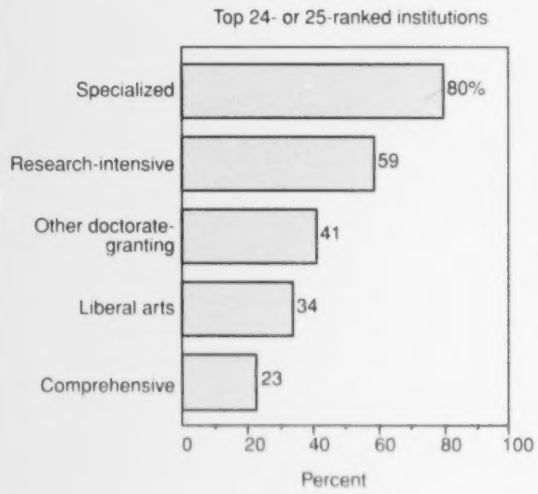
Chart 4.
Percent of recent science and engineering doctorate recipients who earned their bachelor's degree at U.S. research-intensive universities, by field of doctorate



NOTE: See Technical Notes for more information on the Carnegie Classification

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates for the years 1985-90.

Chart 5.
Concentration of baccalaureate-origin institutions of recent science and engineering doctorate recipients within each Carnegie Classification group



NOTE: See Technical Notes for more information on the Carnegie Classification

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates for the years 1985-90

about 60 percent of the bachelor's degrees earned at the 70 research-intensive institutions by recent S&E doctorate recipients (chart 5).

Role of Other Doctorate-Granting Institutions in the Baccalaureate Education of S&E Doctorate Recipients

The 138 other doctorate-granting institutions have established doctoral programs, but have fewer research programs than research-intensive institutions. Many of the schools categorized as other doctorate-granting institutions are significant in the undergraduate education of recent S&E doctorate recipients, accounting for 25 percent of their baccalaureates.

The top 25 other doctorate-granting institutions awarded 41 percent of the category's total S&E doctorate holders' baccalaureates (table 6).

Role of Comprehensive Institutions in the Baccalaureate Education of S&E Doctorate Recipients

Institutions identified as "comprehensive" are those that offer a liberal arts program, a professional or occupational program, and master's degrees. This category includes 568 institutions that award S&E baccalaureates.

The top 24 comprehensive institutions are dominated by the California State university system and the New York City university system, which together accounted for 13 of the top 24. These 13 institutions awarded over two-thirds of the S&E baccalaureates to those who later became S&E doctorate recipients (table 7). Two institutions from Puerto Rico also rank high among comprehensive baccalaureate institutions of recent S&E doctorate recipients.

Comprehensive institutions had conferred baccalaureates on 2 out of every 10 recent science doctorate recipients, twice the proportion found among recent engineering doctorate recipients (chart 2).

Role of Liberal Arts Institutions in the Baccalaureate Education of S&E Doctorate Recipients

Liberal arts colleges are predominantly bachelor's degree-granting institutions that award more than half their degrees in liberal arts fields.

The top 24 liberal arts colleges cited most often by recent S&E doctorate holders as their baccalaureate-origin institutions (table 8) account for 34 percent of the total number of bachelor's degrees awarded by liberal arts institutions to those who went on to earn a doctorate.

When productivity is taken into account, several liberal arts colleges rank with research-intensive universities for number of bachelor's degree recipients who go on to earn a S&E doctorate. A recent report indicated that 15 of the top 25 institutions—ranked by the proportion of the baccalaureate recipients who earned doctorates in the sciences between 1951 and 1980—were liberal arts colleges.[5] Similar findings were also presented in the report on "Persistence in Higher S&E Education."[6]

By field, liberal arts institutions provided the baccalaureate education of 15 percent of science doctor-

[5] Sam Carrier and David Davis-Van Atta, *Maintaining America's Scientific Productivity* (Oberlin, OH: Oberlin College, 1987).

[6] Betty Maxfield, *Persistence in Higher S/E Education: S/E Baccalaureate to S/E Doctorate Production* (Washington, D.C.: Library of Congress, Office of Technology Assessment, 1988).

ate holders, almost four times the proportion found among engineering doctorate holders (chart 2). These institutions play a significant role in the baccalaureate origins of recent doctorate recipients in chemistry, mathematics, and social sciences, and psychology (table 4).

Role of Specialized Institutions in the Baccalaureate Education of S&E Doctorate Recipients

The Nation's 177 specialized schools cited as baccalaureate origins by S&E doctorate holders are primarily engineering or technical schools. The top 24 of these institutions granted 80 percent of the baccalaureate degrees of S&E doctorate recipients awarded by schools of this type.

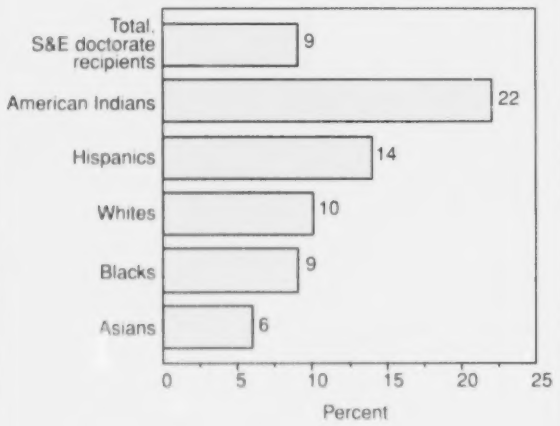
Harvey Mudd College in California headed the list of prominent specialized institutions, followed by three U.S. academies—the U.S. Air Force, U.S. Military, and U.S. Naval Academies—and three New York institutions—Union University, Alfred University, and Cooper Union (table 9). In terms of **S&E field**, the technical nature of specialized institutions is such that engineering doctorate holders were more likely than science doctorate holders to have attended this type of school for their undergraduate education (chart 2).

Role of 2-year Colleges in the Undergraduate Education of S&E Doctorate Recipients

A key difference between white S&E doctorate holders versus doctorate recipients from underrepresented minority groups is the latter's attendance at 2-year colleges. In general, Hispanics and American Indians are more likely than other groups to begin their undergraduate education in 2-year colleges.[7] Specifically, 22 percent of American Indian S&E doctorate holders had attended a 2-year college as had 14 percent of Hispanics (chart 6). In comparison, around one-tenth of both black and white S&E doctorate holders had attended a 2-year school; only 6 percent of Asians had done so. These figures may indicate that 2-year colleges are a significant part of the educational pipeline leading to an S&E doctorate for American Indians and Hispanics.

Attendance at 2-year colleges was more pronounced in certain fields of study. Recent recipients of doctorates in agriculture and psychology were more likely to have gone to 2-year colleges than were majors in other S&E fields (table 10).

Chart 6.
Percent of science and engineering doctorates who attended a 2-year college, by race/ethnicity



NOTE: Includes doctorates awarded to U.S. citizens only. Data were not coded in 1985-86 for attendance at a 2-year college.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates the years 1987-90.

[7] National Center for Education Statistics, *Trends in Minority Enrollment in Higher Education*, Fall 1978 - Fall 1988, (Washington, D.C.: June 1990).

IV. Baccalaureate Origins of Women and Racial/Ethnic Groups with Doctorates in S&E

Women and racial/ethnic minority groups have different patterns of baccalaureate origins than other S&E doctorate holders. In general, the research-intensive institutions play less of a role in their baccalaureate education and the other types of institutions play a greater role.

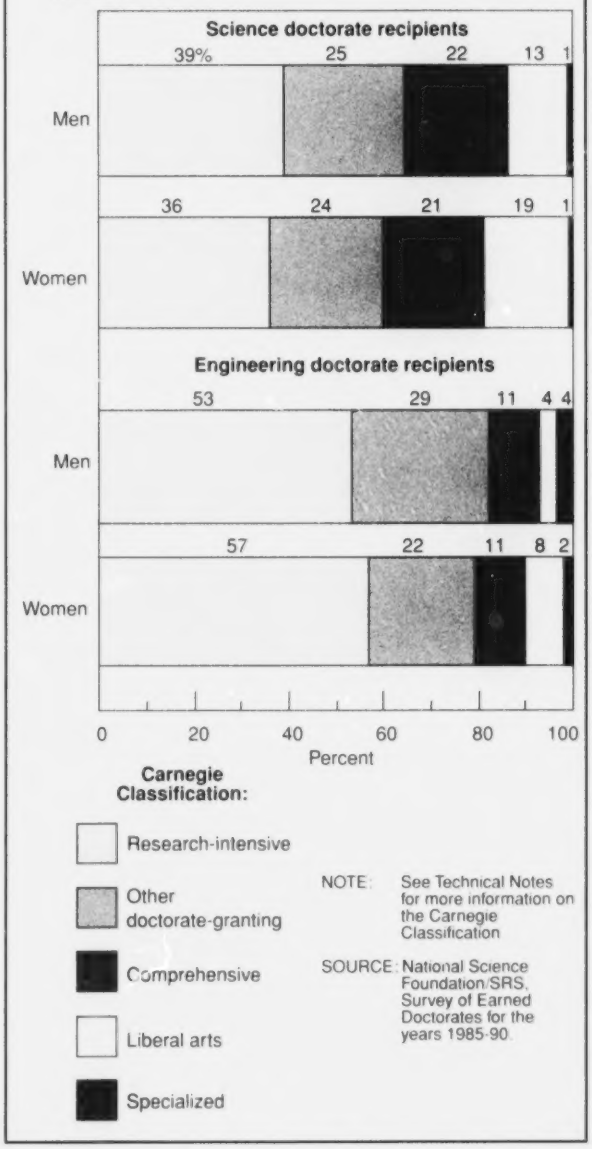
Baccalaureate Origins of Women S&E Doctorate Recipients

Women—who account for approximately one-third of all recent S&E doctorate holders—were less likely than male S&E doctorate holders to earn their baccalaureates at either research-intensive or other doctorate-granting institutions (chart 7). On the other hand, women were much more likely than men to have earned their baccalaureates at liberal arts institutions. Such institutions were cited as the baccalaureate-origin institution of almost one-fifth of science and one-tenth of engineering doctorate holders who were women (table 11).

Women's **25 top-ranked baccalaureate institutions** differed somewhat from the 25 institutions cited by all S&E doctorates. Specifically, six of the institutions on the women's list were not found on the general ranking: Wellesley College, Brown University, Duke University, Columbia University-Barnard, Smith College, and Boston University (table 12).

The inclusion of two women's colleges (Wellesley and Smith) in the ranking reflected the findings of recent studies of baccalaureate origins of women doctorate holders. Taking the number of baccalaureates awarded at each institution into account, these studies found that women's liberal arts colleges were among the most highly productive institutions of women doctorate recipients,[8] especially for women whose field was in the natural sciences[9].

Chart 7.
Baccalaureate origins of recent science and engineering doctorate recipients in U.S. institutions, by sex and Carnegie Classification of Institutions



[8] Carol Fuller, *Undegraduate Origins of Women and Men 1970-1982 Graduates Who Received Doctorates Between 1970-1986* (Ann Arbor, MI: Great Lakes Colleges Association, 1989), pp. 7 and B-24.

[9] Elizabeth M. Tidball, *Baccalaureate Origins of Recent Natural Science Doctorate*, Journal of Higher Education, Vol. 57, No. 6 (November/December 1986), pp. 606-20.

Baccalaureate Origins by Racial/Ethnic Group of S&E Doctorate Recipients

Striking differences frequently emerge in the patterns of baccalaureate origins of white S&E doctorate holders compared with their counterparts in the various racial/ethnic groups[10] (charts 8 and 9). For example, Asians were much more likely than whites to have received their undergraduate degrees at research-intensive universities, and black S&E doctorate holders were less likely than whites to have attended a research-intensive institution (table 13).

In terms of the types of institutions providing S&E undergraduate education, the pattern for black and Hispanic doctorate holders differed from that of other racial/ethnic groups. Comprehensive institutions played a much greater role than the other types of institutions in the undergraduate education of blacks and Hispanics in both science and engineering.

In comparing the top 25 baccalaureate institutions cited by all S&E doctorate holders with those cited by S&E doctorate holders from **underrepresented racial/ethnic groups**,[11] several interesting differences come to light.

The list of the prominent baccalaureate-origin institutions cited by **Hispanic** S&E doctorate holders differed greatly from the list for all S&E doctorate holders. Almost 40 percent of the Hispanic S&E doctorates received their baccalaureates from three Puerto Rican universities (table 14). Also, significant numbers of institutions cited by the Hispanics were located in California, Florida, New Mexico, and Texas, as would be expected given the geographic concentrations of U.S. Hispanic populations.

Because of the small number of **American Indian** S&E doctorate holders, the list of their prominent baccalaureate-origin institutions includes colleges and universities that produced three or more baccalaureates who went on to earn an S&E doctorate (table 15). Only nine of these institutions were also cited by all S&E doctorate holders. The differences in institutions cited by American Indian versus all S&E doctorate holders reflect to a certain extent the geographic concentrations of American Indian populations.

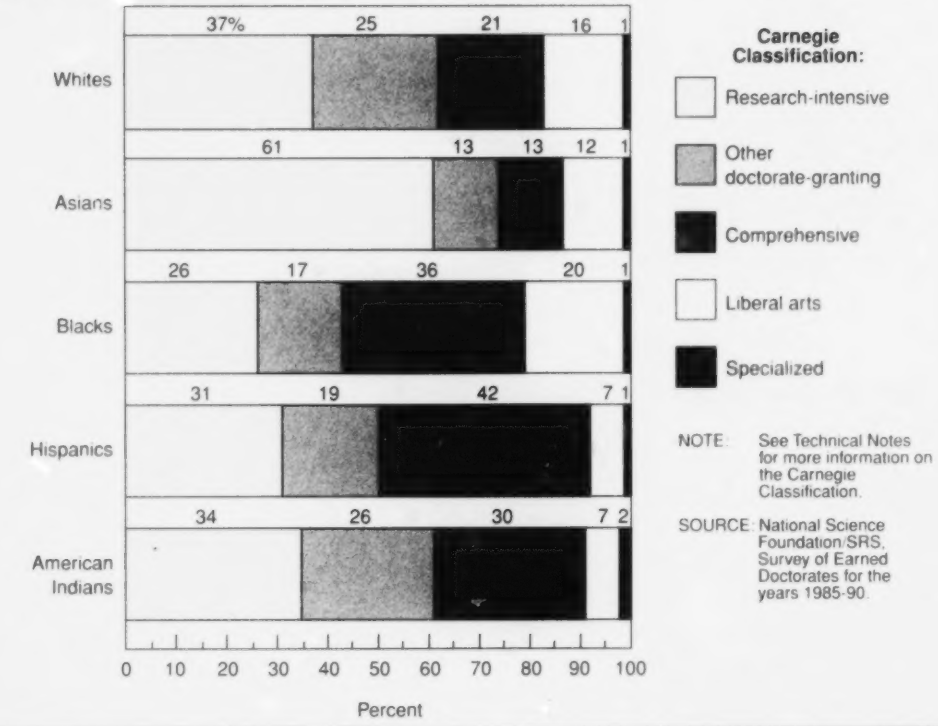
The top 23 baccalaureate-origin institutions for **black** S&E doctorate holders deviated significantly from the general top 25 list (table 16). Specifically, 14 of the top 23 baccalaureate institutions for black S&E doctorates were historically black colleges and universities (HBCUs).

[10] Carol Fuller, *Baccalaureate Sources of 1975-1986 Doctorates Earned by American Indian, Asian, Black, Hispanic and White Men and Women Adjusted for Institutional Size* (Ann Arbor, MI: Great Lakes Colleges Association, 1989).

[11] The following analysis of underrepresented racial/ethnic groups has been limited to U.S. citizen S&E doctorate holders who were Black, Hispanic, or American Indian.

Chart 8.

Baccalaureate origins of recent science doctorate recipients in U.S. institutions, by race/ethnicity and Carnegie Classification of Institutions

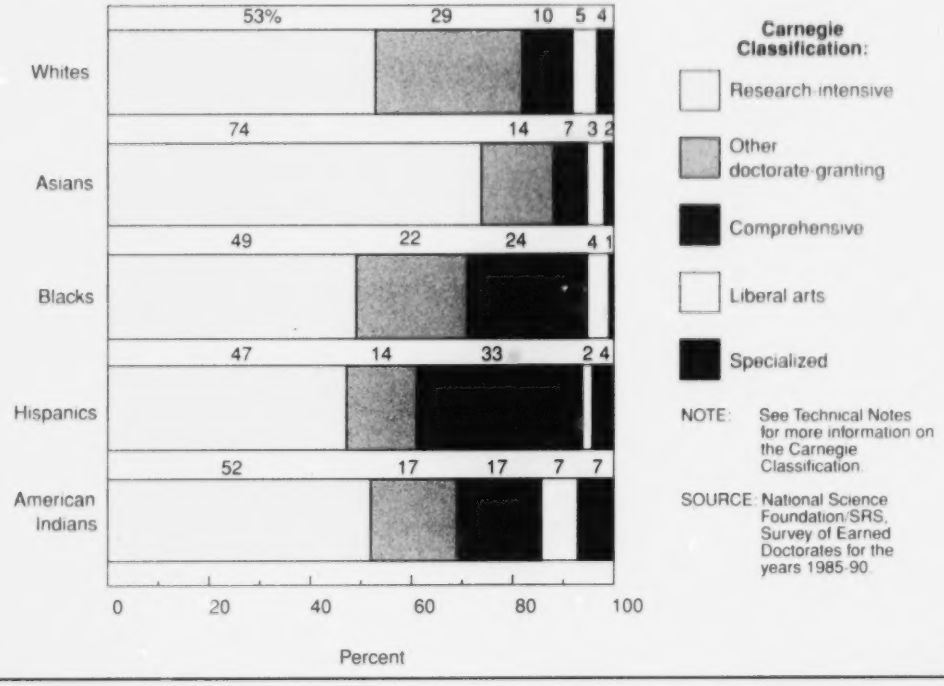


NOTE: See Technical Notes for more information on the Carnegie Classification.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates for the years 1985-90.

Chart 9.

Baccalaureate origins of recent engineering doctorate recipients in U.S. institutions, by race/ethnicity and Carnegie Classification of Institutions



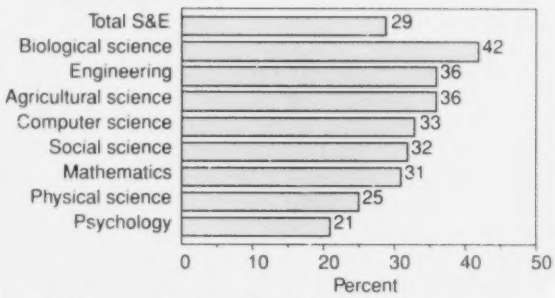
NOTE: See Technical Notes for more information on the Carnegie Classification.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates for the years 1985-90.

Role of Historically Black Colleges and Universities (HBCUs) in the Baccalaureate Education of Black S&E Doctorate Recipients

The HBCUs were originally established under legal segregation for the purpose of educating blacks. These institutions were significant in the baccalaureate education of black S&E doctorate holders in particular,[12] and all fields in general.[13] S&E bachelor's degrees are awarded by 81 HBCUs, most of which are classified as comprehensive or liberal arts institutions. In all, HBCUs accounted for almost 30 percent of the baccalaureate origins of recent black S&E doctorate recipients. HBCUs were of particular significance in providing the baccalaureate origins of black doctorate recipients in natural science fields, such as biological science and agricultural science, and in engineering (chart 10).

Chart 10.
Black U.S.-citizen S&E doctorate recipients with baccalaureate origins in historically black colleges and universities, by broad science and engineering fields



S&E = science and engineering

NOTE: HBCUs are the 81 historically black colleges and universities that award baccalaureates in S&E fields.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates for the years 1985-90.

[12] John T. Hill and Susan T. Hill, *The Role of HBCUs in the Education of Black Scientists and Engineers*, paper presented at the 1991 Conference on Blacks in Higher Education (Washington, D. C., 1991).

[13] Willie Pearson, Jr. and LaRue Pearson, "Baccalaureate Origins of Black American Doctorates: A Cohort Analysis," Journal of Negro Education, Vol. 54, No. 1, (1985) pp. 24-35.

Appendix A.

Technical Notes

Appendix A. Technical Notes

Data Source

This report is based on information collected through the Survey of Earned Doctorates (SED), conducted annually by the National Academy of Sciences for the NSF and other Federal agencies since 1957. Data are collected directly from the individual doctorate recipients, and include a complete enumeration of the individual's educational history. Information from this survey becomes part of the Doctorate Records File, which comprises over 985,000 records for doctorates awarded since 1920 by regionally accredited universities and colleges. Data on doctoral degrees such as the Ph.D or D. Sc. are collected in these surveys, but not on first-professional degrees such as the J.D. or M.D. Approximately 93 percent of the annual cohort of doctorate recipients responded to the questionnaire, which is distributed through the cooperation of the Graduate Deans. Partial data from public sources, such as graduation commencement programs, were added to the file for those doctorate recipients who had not responded. The data for a given year include all doctorates awarded in the 12-month period ending June 30th of the referenced year.

Possible Sources of Survey Error

The SED is a universe survey of all recipients of research doctorates; therefore it is not subject to sampling error. Data obtained from this survey are subject to nonsampling error, however. Nonsampling errors may result from a variety of factors, including nonresponse to the survey or to a particular item; differences in interpreting questions; respondent errors; and errors made in recording the data. It is difficult to quantify the nonsampling error from all possible sources. The following provide known information concerning the three major sources of nonsampling error for the SED: survey nonresponse, item nonresponse, and errors made in recording the data.

Survey Nonresponse

The response rate to the SED is high for a voluntary survey of individuals. The response rate averages 93 percent over the period for which data are presented in this report. For nonrespondents to the survey, information on field of study, doctorate institution, sex, and baccalaureate is obtained from public sources such as commencement programs, and added to the file. Data are not imputed for the other variables in the survey.

An analysis of the sources of nonresponse indicated that survey nonresponse is related to institutions, not to characteristics of the doctoral recipients. Half of the nonresponse in 1990 was accounted for by 3 percent of the institutions in the survey. In general, these institutions employed methods for collecting the survey data that resulted in low response rates or did not have any residency requirements for their doctoral programs.

To the extent the S&E doctorates are awarded by institutions with low response rates to the SED, the effect of nonresponse could vary by field. As the

Table A-1.
Response rates of science and engineering (S&E) doctorate recipients to the Survey of Earned Doctorates, by major field of study: 1990

Major field of study	Response rate[1]
S&E fields, total	92.9%
Physical	93.4
Physics	93.2
Chemistry	93.5
Earth/atmospheric/ oceanographic	92.7
Mathematics	93.0
Computer	94.5
Agriculture	93.7
Biological	94.8
Social	92.9
Psychology	91.0
Engineering[2]	91.9
Chemical	96.8
Civil	93.5
Electrical	92.0
Materials	93.8
Mechanical	91.2
Non-S&E fields	93.8
Total, all fields	93.3

[1] Received with information supplied by doctorate recipient; additional information may have been obtained by the National Research Council from public sources.
[2] Includes other engineering fields not shown separately.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

basic classification variable for the tables in this report, it is important to present response rates by S&E fields. As shown in table A-1, the response rates varied from 91 percent to 97 percent across S&E fields in 1990.

Item Nonresponse

Persons who respond to the survey may choose not to provide the information requested in a particular question or may inadvertently skip an item on the survey form. The public sources already cited (e.g., commencement programs) may provide additional information. The data items reported in the tables in this report are listed in Table A-2 with response rates, showing the extent of information obtainable from any sources for doctorates. For example, the item that concerned baccalaureate-origin institution was available for 96.8 percent of the doctorate recipients in 1990.

Table A-2.
Item response rates: 1990

Item	Response rate
Sex	100.0%
Field of study	100.0
Citizenship	93.2
Race/ethnicity	92.2
Baccalaureate-origin institution*	96.8

*The response rate for this item is higher than the overall survey response rate because public records, such as commencement programs, are used to obtain this information for nonrespondents.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Errors Made in Recording Data

The SED forms are processed on a continual basis throughout the year. When the forms are received from the Graduate Schools, they are reviewed for completeness to determine whether there is enough information to be considered a response. If so, they are ready for data entry. Two methods for data entry were used during the time period covered in this report. Completed survey forms between 1960 and 1987 were coded into paper and then keypunched. Beginning in 1988, some survey forms were directly entered on-line into the computer; in 1989, about half of the survey forms were processed using this method.

An evaluation of the two methods of data entry was conducted in 1990 to determine the undetected error rates for recording data from the SED. The evaluation was conducted after the survey forms had gone through the computer-editing process designed to check for completeness, legitimate range values, and internal consistency.

The results of the evaluation showed that the error rate is less than one percent. Because the SED is a survey of individuals, an error in recording a data item affects only that item for that individual. The evaluation found that the error rate per item was .0037 for the paper coding/keypunch method and .0023 for the on-line data entry method. The SED is currently making a complete conversion to the on-line data entry method.

Carnegie Classification of Institutions of Higher Education

The classification system for institutions used in this study was modified from the 1987 Carnegie Classification of Institutions. Using this classification, five types of institutions were identified, as follows.

Research-Intensive Universities are the 70 leading universities in terms of Federal financial support of research and development in at least two of the three academic years (1982-83, 1983-84, and 1984-85), provided they awarded at least 50 Ph.D.'s in 1983-84. Examples include University of California at Berkeley (CA), University of Texas at Austin (TX), Duke University (NC), and University of Chicago (IL).

Other Doctorate-Granting Universities are the major doctoral-granting institutions, classified by Carnegie in the categories of Research Universities II, Doctorate-Granting I, and Doctorate-Granting II. The established doctoral programs of these institutions have awarded at least 20 Ph.D.'s in any field, or 10 Ph.D's in three or more fields, in 1983-84. Examples include Iowa State University (IA), University of South Florida (FL), Howard University (DC), and Rensselaer Polytechnic Institute (NY).

Comprehensive Institutions offered a liberal arts program as well as other programs such as engineering, business administration, and nursing. Many offered master's degrees, but all either lacked a doctoral program or had an extremely limited one. Former teachers colleges that broadened their curricula in the 1960s are included in this category. Examples include Glassboro State College (NJ), Old Dominion University (VA), Creighton University (NE), and Aquinas College (MI).

Liberal Arts Colleges are predominantly bachelor's-degree granting institutions that award more than half their degrees in liberal arts. Institutions such as Oberlin College are included, even though they have master's degree programs. This category also includes a group of colleges that awarded less than half their degrees in liberal arts fields, but were too small (i.e., less than 1,500 students) to be considered "comprehensive." Examples of colleges in this category include Reed (OR), Bryn Mawr (PA), College of Charleston (SC), and Fisk University (TN).

Specialized Institutions focused primarily on technical, professional, or corporate programs in a range of areas such as theology, medicine, engineering, business, art, music, law, and teaching. Examples of specialized institutions include New Jersey Institute of Technology, Princeton Theological Seminary (NJ), University of Oklahoma Health Science Center, and Teacher's College of Columbia (NY).

Requests for additional information concerning the survey methodology and analysis should be directed to Susan T. Hill at the following address:

Division of Science Resources Studies
National Science Foundation (Room L-609)
1800 G Street, N.W.
Washington, D.C. 20550
(202) 634-4787

Table A-3.
1987 Carnegie Classification system modified for this report

Modified classification	Carnegie class	Number in study	Number cited
Research-incentives universities	1.1	70	70
Other doctorate granting universities	1.2-1.4	143	138
Comprehensive institutions	2.1-2.2	601	568
Liberal arts colleges	3.1-3.2	564	518
Specialized institutions	5.1-5.9	643	177

NOTE: Excludes institutions that did not award bachelor's degrees.

SOURCE: Carnegie Foundation. To determine the classification of any institution, refer to "Carnegie Foundation's Classifications of More than 3,300 Institutions of Higher Education." The Chronicle of Higher Education, July 8, 1987, pp. 22-30.

Appendix B

Detailed Statistical Tables

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Table 1. U.S. vs. foreign baccalaureate-origin institutions of S&E 1985-90 doctorate recipients, by field of doctorate

[Percent distribution]

Field of doctorate	Total	U.S. colleges and universities	Foreign colleges and universities
S&E fields.....	100%	72%	29%
Sciences, total.....	100	77	23
Physical sciences.....	100	71	30
Physics.....	100	64	36
Chemistry.....	100	75	25
Earth, atmos., & ocean..	100	76	24
Mathematics.....	100	53	47
Computer science.....	100	58	42
Agricultural science....	100	63	37
Biological science.....	100	84	16
Psychology.....	100	95	5
Social science.....	100	70	31
Engineering, total.....	100	49	51
Chemical.....	100	59	41
Civil.....	100	42	58
Electrical/electronics..	100	51	49
Mechanical.....	100	44	56
Other engineering.....	100	49	51

S&E = Science and Engineering

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Table 2. Foreign 1985-90 S&E doctorate recipients who earned baccalaurates at U.S. institutions, by visa type and region/country of citizenship

Region/country of citizenship	Permanent visas		Temporary visas	
	Total number	Percentage who earned baccalaureate in the U.S.	Total number	Percentage who earned baccalaureate in the U.S.
Total, foreign citizenship....	6,410	29%	29,203	7%
Canada.....	277	37	898	5
Mexico & Central America.....	117	38	666	9
Mexico.....	78	37	516	3
Caribbean islands.....	77	75	99	35
South America.....	273	40	1,514	8
Argentina.....	35	21	210	5
Brazil.....	44	28	537	1
Chile.....	42	30	229	3
Colombia.....	45	38	140	14
Europe.....	927	37	2,909	7
Belgium.....	23	32	97	2
England.....	223	29	355	7
France.....	64	26	211	3
East and West Germany.....	153	54	326	9
Greece.....	144	38	525	11
Italy.....	50	37	267	3
East Asia.....	1,585	13	11,856	5
Taiwan.....	875	3	3,983	1
Peoples Republic of China...	140	18	2,565	2
China (unspecified).....	14	23	142	2
Hong Kong.....	92	72	428	47
Japan.....	75	38	563	10
Korea.....	296	8	3,281	1
Thailand.....	40	18	537	7
West Asia.....	1,548	28	6,173	11
India.....	520	4	2,650	1
Iran.....	520	54	720	43
Iraq.....	26	4	170	4
Israel.....	88	17	326	4
Lebanon.....	71	62	158	35
Turkey.....	88	17	429	8
Pakistan.....	43	20	307	6
Australasia.....	136	22	779	4
Australia.....	63	13	176	1
Indonesia.....	20	63	248	8
New Zealand.....	16	19	93	0
Phillippines.....	36	17	256	3
Africa.....	456	47	2,303	12
Egypt.....	81	0	600	1
Nigeria.....	148	82	362	36
Country unknown.....	1,014	31	2,006	8

NOTE: Regions include other countries not specified.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

S&E = Science and Engineering

Table 3. Top 25 baccalaureate-origin institutions of 1985-90 science and engineering (S&E) doctorate recipients, ranked according to total S&E doctorates, by field of doctorate

Baccalaureate-origin institution	Total number of S&E doctorate recipients	Total science	Field of science							Total engineering
			Physical science 1/	Mathe-matics	Computer	Agricultural science	Biological science	Psychology	Social science	
University of California-Berkeley	1,526	1,308	319	51	33	41	384	191	289	218
Cornell University	1,159	978	195	18	30	89	367	136	143	181
University of Illinois-Urbana-Champaign	1,108	776	169	15	26	100	242	135	89	332
University of Michigan	1,105	876	169	19	30	24	274	194	166	229
Massachusetts Institute of Technology	1,028	628	327	54	54	1	126	13	53	400
Pennsylvania State University	997	811	165	14	18	118	252	130	114	186
University of Wisconsin-Madison	938	806	156	24	16	84	225	146	155	132
University of California-Los Angeles	920	805	175	22	19	4	197	249	139	115
Michigan State University	760	652	83	17	13	103	226	111	99	108
University of Minnesota-Minneapolis	754	621	111	18	10	85	167	121	109	133
Rutgers University (NJ)	746	658	145	11	3	54	219	153	73	88
Harvard University (MA)	740	698	142	48	42	6	202	92	166	42
University of California-Davis	734	656	107	13	7	74	337	62	56	78
Purdue University (IN)	715	465	116	4	17	84	154	46	44	250
Ohio State University	661	546	83	11	18	81	149	117	87	115
University of Washington	618	526	139	21	13	29	130	100	94	92
University of Texas-Austin	608	480	96	21	15	9	97	149	93	128
University of Maryland	597	502	93	16	12	38	165	100	78	95
Stanford University (CA)	588	502	116	14	17	5	133	104	113	86
University of Pennsylvania	566	497	80	8	13	2	143	139	112	69
Princeton University (NJ)	538	442	150	47	21	1	93	57	73	96
Iowa State University	525	396	57	6	13	102	118	37	63	129
University of Florida	520	425	60	17	6	53	109	120	60	95
University of Colorado-Boulder	518	444	85	19	7	9	116	96	112	74
Yale University (CT)	512	480	110	15	22	2	137	92	102	32
Total, top 25	19,481	15,978	3,448	523	475	1,198	4,762	2,890	2,682	3,503
Total, all U.S. institutions	83,032	72,055	15,942	2,282	1,650	3,809	19,284	16,890	12,198	10,977
Top 25 as a percent of all institutions	24%	22%	22%	23%	29%	32%	25%	17%	22%	32%

1/ Includes earth, atmospheric, and oceanographic sciences.

NOTE: Rankings are based on the number of persons who responded to the Survey of Earned Doctorates.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

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Table 4. Baccalaureate-origin institutions of 1985-90 science and engineering doctorate recipients, by Carnegie Classification of U.S. institutions and field of doctorate

[Percent distribution]

Field of doctorate	Total percent	Research-intensive universities	Other doctorate granting universities	Comprehensive institutions	Liberal arts colleges	Specialized institutions
S&E fields.....	100%	40%	25%	20%	14%	2%
Sciences, total.....	100	38	25	21	15	1
Physical sciences.....	100	37	22	24	16	2
Physics.....	100	51	21	15	12	2
Chemistry.....	100	29	22	28	19	2
Earth, atmos., & ocean.....	100	42	27	14	15	1
Mathematics.....	100	40	23	19	16	2
Computer science.....	100	46	25	17	10	3
Agricultural science.....	100	47	29	17	7	0
Biological science.....	100	41	24	20	15	1
Psychology.....	100	32	26	25	16	1
Social science.....	100	36	25	21	17	1
Engineering, total.....	100	53	28	11	4	4
Chemical.....	100	57	31	7	3	2
Civil.....	100	44	34	16	3	3
Electrical.....	100	55	27	11	4	3
Mechanical.....	100	53	30	12	3	3
Other engineering.....	100	53	26	11	5	5

S&E = Science and Engineering

NOTE: Because of rounding, components may not add to totals.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Table 5. Top 25 research-intensive baccalaureate-origin institutions of 1985-90 science and engineering (S&E) doctorate recipients, ranked according to total S&E doctorates, by field of doctorate

Baccalaureate-origin institution	Total number of S&E doctorate recipients	Total science	Field of science							Total engineering
			Physical science 1/	Mathematics	Computer	Agricultural science	Biological science	Psychology	Social science	
University of California-Berkeley.....	1,526	1,308	319	51	33	41	384	191	289	218
Cornell University.....	1,159	978	195	18	30	89	367	136	143	181
University of Illinois-Urbana-Champaign	1,108	776	169	15	26	100	242	135	89	332
University of Michigan.....	1,105	876	169	19	30	24	274	194	166	229
Massachusetts Institute of Technology..	1,028	628	327	54	54	1	126	13	53	400
Pennsylvania State University.....	997	811	165	14	18	118	252	130	114	186
University of Wisconsin-Madison.....	938	806	156	24	16	84	225	146	155	132
University of California-Los Angeles...	920	805	175	22	19	4	197	249	139	115
Michigan State University.....	760	652	83	17	13	103	226	111	99	108
University of Minnesota-Minneapolis....	754	621	111	18	10	85	167	121	109	133
Rutgers University (NJ).....	746	658	145	11	3	54	219	153	73	88
Harvard University (MA).....	740	698	142	48	42	6	202	92	166	42
University of California-Davis.....	734	656	107	13	7	74	337	62	56	78
Purdue University (IN).....	715	465	116	4	17	84	154	46	44	250
Ohio State University.....	661	546	83	11	18	81	149	117	87	115
University of Washington.....	618	526	139	21	13	29	130	100	94	92
University of Texas-Austin.....	608	480	96	21	15	9	97	149	93	128
University of Maryland.....	597	502	93	16	12	38	165	100	78	95
Stanford University (CA).....	588	502	116	14	17	5	133	104	113	86
University of Pennsylvania.....	566	497	80	8	13	2	143	139	112	69
Princeton University (NJ).....	538	442	150	47	21	1	93	57	73	96
University of Florida.....	520	425	60	17	6	53	109	120	60	95
University of Colorado-Boulder.....	518	444	85	19	7	9	116	96	112	74
Yale University (CT).....	512	480	110	15	22	2	137	92	102	32
Suny at Stony Brook.....	462	422	78	17	6	4	107	165	45	40
Total, top 25.....	19,418	16,004	3,469	534	468	1,100	4,751	3,018	2,664	3,414
Total, all research-intensive institutions.....	32,766	26,939	5,990	915	753	1,798	7,822	5,306	4,355	5,827
Top 25 as a percent of all research-intensive institutions.....	59%	59%	58%	58%	62%	61%	61%	57%	61%	59%

1/ Includes earth, atmospheric, and oceanographic sciences.

NOTE: Rankings are based on the number of persons who responded to the Survey of Earned Doctorates.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Table 6. Top 25 other doctorate-granting baccalaureate-origin institutions of 1985-90 science and engineering (S&E) doctorate recipients, ranked according to total S&E doctorates by field of doctorate

Baccalaureate-origin institution	Total number of S&E doctorate recipients	Total science	Field of science							Total engineering
			Physical science 1/	Mathematics	Computer	Agricultural science	Biological science	Psychology	Social science	
Iowa State University	525	396	57	6	13	102	118	37	63	129
SUNY at Buffalo	508	402	100	9	15	4	95	110	69	106
University of Massachusetts-Amherst	505	443	76	8	2	52	146	89	70	62
Brown University (RI)	486	419	81	24	21	1	110	121	61	67
University of California-Santa Barbara	476	430	74	15	5	11	149	87	89	46
Brigham Young University (UT)	463	373	69	6	5	34	90	95	74	90
University of Delaware	426	331	81	6	5	27	105	50	57	95
University of California-Santa Cruz	368	362	80	12	4	5	98	77	86	6
Renesselaer Polytechnic (NY)	367	210	130	12	6	1	39	8	14	157
University of Kansas	345	289	68	6	6	4	75	73	57	56
SUNY at Binghamton	337	332	50	10	15	1	87	120	49	5
SUNY at Albany	317	307	62	8	11	4	84	81	57	10
University of Notre Dame (IN)	317	242	59	11	3	0	83	47	39	75
University of Nebraska-Lincoln	287	254	31	11	8	47	65	47	45	33
Rice University (TX)	275	204	78	25	22	0	41	20	18	71
Oklahoma State University	273	212	22	2	8	35	56	60	29	61
Kansas State University	259	206	16	4	2	62	76	21	25	53
Florida State University	257	251	58	8	10	6	56	68	45	6
College of William and Mary (VA)	254	238	78	5	7	2	60	45	41	16
Dartmouth College (NH)	253	234	75	16	8	0	61	29	45	19
University of California-Riverside	252	244	57	7	1	22	67	46	44	8
Miami University (OH)	249	238	49	5	1	6	78	54	45	11
Arizona State University	247	213	40	8	4	10	54	59	38	34
Brandeis University (MA)	241	233	30	7	6	1	63	74	52	8
Syracuse University (NY)	240	203	44	4	7	2	51	59	36	37
Total, top 25	8,527	7,266	1,565	235	195	439	2,007	1,577	1,248	1,261
Total, all other doctorate-granting institutions	20,645	17,567	3,598	514	406	1,096	4,584	4,319	3,050	3,078
Top 25 as a percent of all other doctorate-granting institutions	41%	41%	44%	46%	48%	40%	44%	37%	41%	41%

1/ Includes earth, atmospheric, and oceanographic sciences.

NOTE: Rankings are based on the number of persons who responded to the Survey of Earned Doctorates.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Table 7. Top 24 comprehensive baccalaureate-origin institutions of 1985-90 science and engineering (S&E) doctorate recipients, ranked according to total S&E doctorates, by field of doctorate

Baccalaureate-origin institution	Total number of S&E doctorate recipients	Total science	Field of science							Total engineering
			Physical science 1/	Mathematic	Computer	Agricultural science	Biological science	Psychology	Social science	
CUNY-Queens College	264	262	40	5	8	2	28	116	63	2
San Diego State University (CA)	254	239	39	2	3	5	43	95	52	15
CUNY-City College	253	216	32	10	7	3	29	87	48	37
University of Puerto Rico-Rio Piedras	241	229	73	7	2	7	52	39	49	12
CUNY-Brooklyn College	232	231	23	3	10	0	32	123	40	1
California State University-Northridge	194	187	23	4	1	0	35	95	29	7
California State University-Long Beach	182	161	17	3	1	7	39	74	20	21
Humboldt State University (CA)	176	158	36	5	1	35	62	7	12	18
San Francisco State University (CA)	173	170	21	3	0	1	33	80	32	3
California Polytechnic State University-San Luis Obispo	154	115	31	3	2	36	32	4	7	39
CUNY-Hunter College	147	146	14	6	4	1	19	70	32	1
San Jose State University (CA)	144	121	22	2	2	2	28	39	26	23
Michigan Tech University	142	57	25	5	2	8	17	0	0	85
California State University-Fullerton	131	130	22	3	2	0	19	60	24	1
University of Dayton (OH)	122	85	15	1	4	4	25	23	13	37
California State University-Fresno	120	107	20	1	4	11	20	32	19	13
California State University-Los Angeles	118	113	14	3	1	0	12	51	32	5
Western Washington University	110	109	32	4	2	3	23	22	23	1
Wake Forest University (NC)	105	97	20	6	2	0	27	22	20	8
California State University-Sacramento	104	89	16	4	1	3	11	34	20	15
Oakland University (MI)	100	86	24	3	1	1	26	21	10	14
Worcester Poly I/MA	99	55	39	1	1	1	12	1	0	44
Indiana University (PA)	98	97	29	3	1	1	30	18	15	1
University of Central Florida (FL)	95	80	23	7	4	0	16	20	10	15
Total, top 24	3,758	3,340	650	94	66	131	670	1,133	596	418
Total, all comprehensive institutions	16,556	15,359	3,459	442	279	640	3,749	4,256	2,534	1,197
Top 24 as a percent of all comprehensive institutions	23%	22%	19%	21%	24%	21%	18%	27%	24%	35%

1/ Includes earth, atmospheric, and oceanographic sciences.

NOTE: Rankings are based on the number of persons who responded to the Survey of Earned Doctorates.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Table 8. Top 24 liberal arts baccalaureate-origin institutions of 1985-90 science and engineering (S&E) doctorate recipients, ranked according to total S&E doctorate, by field of doctorate

Baccalaureate-origin institution	Total number of S&E doctorate recipients	Total science	Field of science							Total engineering
			Physical science 1/	Mathematics	Computer	Agricultural science	Biological science	Psychology	Social science	
Oberlin College (OR)	323	314	53	13	9	6	75	82	76	9
Carleton College (MN)	255	249	95	9	5	6	66	29	39	6
Swarthmore College (PA)	226	208	50	6	5	1	41	41	64	18
Reed College (OR)	192	184	60	11	7	2	40	21	43	8
Wellesley College (MA)	189	185	32	2	1	1	48	54	47	4
Pomona College (GA)	188	184	41	9	3	0	49	39	43	4
Columbia-Barnard (NY)	182	178	12	3	2	1	47	73	40	4
Wesleyan University (CT)	177	172	31	6	7	3	45	39	41	5
Smith College (MA)	174	172	21	2	1	3	57	42	46	2
Bucknell University (PA)	168	142	43	3	4	2	36	30	24	26
St. Olaf College (MN)	147	141	42	12	3	5	35	26	18	6
Williams College (MA)	145	143	32	5	4	0	33	34	35	2
Kalamazoo College (MI)	145	139	43	8	2	2	41	24	19	6
Vassar College (NY)	144	141	14	5	2	2	32	51	35	3
Franklin and Marshall College (PA)	143	134	50	1	1	0	27	35	20	9
Mt. Holyoke College (MA)	142	137	28	4	0	1	41	44	19	5
Colgate University (NY)	131	130	43	3	2	2	33	25	22	1
Amherst College (MA)	127	122	26	3	3	2	38	18	32	5
Grinnell College (IA)	126	122	35	6	3	1	34	19	24	4
Haverford College (PA)	122	115	26	5	2	1	30	26	25	7
Wheaton College (IL)	116	114	27	5	2	5	20	41	14	2
Bryn Mawr College (PA)	114	110	24	5	0	1	30	13	37	4
Antioch College (OH)	114	107	15	2	2	2	26	33	27	7
Hope College (MI)	110	105	44	0	1	1	31	20	8	5
Total, top 24	3,900	3,748	887	128	71	50	955	859	798	152
Total, all liberal arts institutions	11,381	10,940	2,580	365	162	252	2,886	2,678	2,017	441
Top 24 as a percent of all liberal arts institutions	34%	34%	34%	35%	44%	20%	33%	32%	40%	35%

1/ Includes earth, atmospheric, and oceanographic sciences.

NOTE: Rankings are based on the number of persons who responded to the Survey of Earned Doctorates.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Table 9. Top 24 specialized baccalaureate-origin institutions of 1985-90 science and engineering (S&E) doctorate recipients, ranked according to total S&E doctorates, by field of doctorate

Baccalaureate-origin institution	Total number of S&E doctorate recipients	Total Science	Field of doctorate							Total engineering
			Physical science 1/	Mathematics	Computer	Agricultural science	Biological science	Psychology	Social science	
Harvey Mudd College (CA)	132	112	83	12	4	0	9	1	3	20
US Military Academy	117	59	12	5	6	0	3	5	28	58
USAF Academy (CO)	117	63	24	4	6	0	6	11	12	54
Union University (NY)	113	100	19	1	4	0	30	34	12	13
Alfred University (NY)	72	27	5	1	0	1	8	8	4	45
US Naval Academy (MO)	61	33	14	1	1	2	0	3	12	28
Cooper Union (NY)	58	24	9	3	4	0	5	2	1	34
Rose-Hulman Tech (IN)	52	23	17	2	2	0	2	0	0	29
New Mexico Institute of Mining and Technology	47	36	22	4	0	0	5	2	3	11
South Dakota State Mining and Technology	34	13	9	0	2	0	2	0	0	21
Philadelphia College Pharmacy & Science (PA)	33	33	11	0	0	0	22	0	0	0
New Jersey Institute of Technology	32	5	2	1	1	0	0	0	1	27
Maryland University School of Medicine	22	22	2	0	0	0	12	4	4	0
GMI Engineering and Managmement Institute (MI)	18	2	0	0	0	0	0	1	1	16
New School Social Research (NY)	17	17	1	0	0	0	3	5	8	0
CUNY-John Jay College	13	13	0	0	0	0	1	2	10	0
Nebraska University Medical Center	10	10	1	0	0	0	6	2	1	0
US Merchant Marine Academy	9	3	1	0	1	0	0	0	1	6
Shimer College (IL)	9	9	0	0	0	0	2	4	3	0
Indiana Institute of Technology	8	4	1	0	1	0	0	0	2	4
St. Marys Seminary and University (MD)	8	7	0	0	0	0	0	5	2	1
US Coast Guard Academy	7	6	2	0	1	1	0	1	1	1
Trinity College (IL)	7	7	4	0	0	0	0	2	1	0
Milwaukee School of Engineering	7	1	0	0	0	0	0	0	1	6
Total, top 24	1,003	629	239	34	33	4	116	92	111	374
Total, all specialized institutions	1,261	867	264	37	42	12	169	186	157	394
Top 24 as a percent of all specialized institutions	80%	73%	91%	92%	79%	33%	69%	50%	71%	95%

S&E = Science and Engineering

1/ Includes earth, atmospheric, and oceanographic sciences.

NOTE: Rankings are based on the number of persons who responded to the Survey of Earned Doctorates.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Table 10. Science and engineering (S&E) doctorate recipients (U.S. citizens only) who attend a 2-year college, by field of doctorate: 1987-90

Field of S&E doctorate and race/ethnicity	1987-90 doctorate recipients*	Attended 2-year college	
		Number	Percent
Total, sciences and engineering.....	52,966	4,847	9%
Total sciences.....	45,836	4,339	10
Physical sciences.....	8,230	604	8
Physics/astronomy.....	2,816	153	6
Chemistry.....	5,414	451	9
Earth, atmos, & ocean sciences....	1,986	163	8
Biological/agricultural.....	14,686	1,416	10
Agricultural science.....	2,352	343	15
Biological science.....	12,334	1,073	9
Mathematics.....	1,449	106	8
Computer science.....	1,208	84	7
Social science.....	7,389	648	9
Psychology.....	10,888	1,318	13
Total engineering.....	7,130	508	7
Chemical.....	1,273	61	5
Civil.....	634	57	9
Electrical/electronics.....	1,476	108	8
Materials science.....	469	27	6
Mechanical.....	1,052	92	9
Other.....	2,226	163	7
American Indian.....	185	37	22
Asian.....	1,848	107	6
Black.....	1,042	101	10
Hispanic.....	1,318	177	14
White.....	47,533	4,348	9

* This excludes doctorate recipients for whom attendance at a 2-year college, or race/ethnicity was unknown. Data on attendance at a 2-year college were not available for doctorates in 1985 or 1986.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Table 11. U.S. baccalaureate-origin institutions of all 1985-90 science and engineering (S&E) doctorate recipients, by sex and by Carnegie Classification of U.S. institutions

Carnegie classification of U.S. baccalaureate-origin institutions 1/	S&E doctorate recipients			Science doctorate recipients			Engineering doctorate recipients		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
Research-intensive universities	40	41	37	38	39	36	53	53	57
Other doctorate-granting universities	25	26	23	25	25	24	28	29	22
Comprehensive institutions	20	20	21	21	22	21	11	11	11
Liberal arts colleges	14	12	18	15	13	19	4	4	8
Specialized institutions	2	2	1	1	1	1	4	4	2

1/ Excludes foreign institutions and U.S. institutions that closed or for which classifications could not be determined.

NOTES: Because of rounding, components may not add to totals. See Appendix A, Technical Notes, for information on the Carnegie Classification of higher-education institutions.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Table 12. Top 25 baccalaureate-origin institutions of 1985-90 female science and engineering (S&E) doctorate recipients, ranked according to total S&E doctorates, by field of doctorate

Baccalaureate-origin institution	Total number of S&E doctorate recipients	Total science	Field of science							Total engineering
			Physical science 1/	Mathematics	Computer	Agricultural science	Biological science	Psychology	Social science	
University of California-Berkeley.....	462	438	42	12	2	13	146	107	116	24
Cornell University (NY).....	397	380	36	4	6	30	151	101	52	17
University of Michigan.....	391	369	30	3	2	3	102	146	83	22
University of California-Los Angeles....	341	328	27	5	2	1	66	156	71	13
University of Illinois-Urbana-Champaign.	309	277	26	3	3	29	97	74	45	32
University of Wisconsin-Madison.....	283	270	21	2	3	22	72	91	59	13
Pennsylvania State University.....	274	252	24	0	4	21	89	67	47	22
Rutgers University (NJ).....	250	240	29	2	1	11	78	85	34	10
University of California-Davis.....	241	239	23	5	0	25	125	34	27	2
University of Pennsylvania.....	236	223	11	3	3	1	48	107	50	13
Michigan State University.....	221	208	11	2	5	24	72	53	41	13
University of Minnesota-Minneapolis.....	219	202	14	3	0	16	49	65	55	17
Stanford University (CA).....	211	196	22	2	2	2	53	68	47	15
Ohio State University.....	205	189	11	2	2	19	48	66	41	16
University of Texas-Austin.....	196	184	13	7	4	4	44	80	32	12
Wellesley College (MA)*.....	189	185	32	2	1	1	48	54	47	4
University of Maryland.....	188	179	18	4	0	11	67	56	23	9
Brown University (RI).....	183	172	18	3	4	0	50	73	24	11
Columbia-Barnard (NY)*.....	181	177	12	3	2	1	46	73	40	4
University of Boston (MA).....	179	178	7	1	2	0	42	89	37	1
Smith College (MA)*.....	173	171	21	2	1	3	57	42	45	2
University of Washington.....	172	163	19	4	2	8	36	52	42	9
Duke University (NC).....	166	156	21	1	2	3	44	64	21	10
University of Colorado-Boulder.....	164	156	9	3	4	3	38	50	49	8
Purdue University (IN).....	160	136	23	1	4	13	51	30	14	24
Total, top 25.....	5,991	5,668	520	79	61	264	1,719	1,883	1,142	323
Total, all institutions.....	26,414	25,297	2,917	444	299	794	6,959	9,186	4,698	1,117
Top 25 as a percent of all institutions.	23%	22%	18%	18%	20%	33%	25%	21%	24%	29%

* Listed as Women's Colleges in the United States by Women's College Coalition, 1090 Vermont Avenue, NW, Washington, D.C. 20005

1/ Includes earth, atmospheric, and oceanographic sciences.

NOTE: Rankings are based on the number of persons who responded to the Survey of Earned Doctorates.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Table 13. U.S. baccalaureate-origin institutions of all 1985-90 science and engineering (S&E) doctorate recipients, by race/ethnicity and by Carnegie Classification

Carnegie classification of U.S. baccalaureate institutions 1/	Race/ethnicity of S&E doctorate recipients 2/				
	White	Asian	Black	Hispanic	American Indian
Total number	69,354	1,885	1,523	1,737	273
Total percent	100%	100%	100%	100%	100%
Research-intensive universities	39	64	28	32	36
Other doctorate-granting universities	26	13	18	19	25
Comprehensive institutions	19	12	35	41	29
Liberal arts colleges	14	10	19	7	7
Specialized institutions	2	2	1	1	3
	Race/ethnicity of science doctorate recipients				
Total number	61,130	1,414	1,411	1,571	244
Total percent	100%	100%	100%	100%	100%
Research-intensive universities	37	61	26	31	34
Other doctorate-granting universities	25	13	17	19	26
Comprehensive institutions	21	13	36	42	30
Liberal arts colleges	16	12	20	7	7
Specialized institutions	1	1	1	1	2
	Race/ethnicity of engineering doctorate recipients				
Total number	8,224	471	112	166	29
Total percent	100%	100%	100%	100%	100%
Research-intensive universities	53	74	49	47	52
Other doctorate-granting universities	29	14	22	14	17
Comprehensive institutions	10	7	24	33	17
Liberal arts colleges	5	3	4	2	7
Specialized institutions	4	2	1	4	7

1/ Excludes institutions that closed and others for which classifications could not be determined.

2/ Excludes recipients for whom race/ethnicity was not known.

NOTES: Because of rounding, components may not add to totals.
See Appendix A, Technical Notes for information on the Carnegie classification of higher education institutions.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Table 14. Top 23 baccalaureate-origin institutions of 1985-90 science and engineering (S&E) doctorate recipients who were Hispanic U.S. citizens, by field of doctorate

Baccalaureate-origin institution	Total number of S&E doctorate recipients	Total Science	Field of science							Total engineering
			Physical science 1/	Mathematics	Computer	Agricultural science	Biological science	Psychology	Social science	
University of Puerto Rico-Rio Piedras...	226	214	66	7	2	7	51	35	46	12
University of Puerto Rico-Mayaguez.....	73	50	17	2	0	10	14	2	5	23
University of California-Berkeley.....	30	26	6	0	1	1	6	7	5	4
University of Texas-Austin.....	29	26	6	2	0	0	4	12	2	3
University of Miami (FL).....	28	26	3	0	0	0	10	13	0	2
University of California-Los Angeles....	27	27	3	0	0	0	10	9	5	0
University of Florida.....	26	21	0	3	0	1	4	6	7	5
University of New Mexico.....	24	19	9	1	0	0	2	5	2	5
University of California-Santa Cruz.....	21	21	1	1	0	0	5	5	9	0
New York University.....	20	19	4	1	2	0	2	5	5	1
Cuny City College.....	18	15	2	0	0	0	1	9	3	3
Rutgers University (NJ).....	18	16	1	0	0	2	4	6	3	2
University of California-Santa Barbara..	18	17	2	0	0	0	5	2	8	1
Texas A&M University.....	17	12	3	0	0	1	1	5	2	5
University of Texas-El Paso.....	17	12	0	1	0	0	2	8	1	5
Stanford University (CA).....	17	15	4	0	0	0	2	3	6	2
Catholic University (P.R.).....	17	17	7	0	0	0	2	6	2	0
Princeton University (NJ).....	16	15	4	1	0	0	1	4	5	1
New Mexico State University.....	16	14	2	0	1	6	4	1	0	2
Massachusetts Institute of Technology...	14	12	9	1	1	0	1	0	0	2
University of Michigan.....	14	12	1	0	1	0	3	4	3	2
University of Arizona.....	14	11	0	0	0	1	5	2	3	3
California State University-Los Angeles.	14	12	3	0	0	0	1	5	3	2
Total, top 23.....	714	629	153	20	8	29	140	154	125	85
Total, all institutions.....	1,752	1,584	301	37	20	63	334	497	332	168
Top 23 as a percent of all institutions.	41%	40%	51%	54%	40%	46%	42%	31%	38%	51%

1/ Includes earth, atmospheric, and oceanographic sciences.

NOTE: Rankings are based on the number of persons who responded to the Survey of Earned Doctorates.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Table 15. Top 24 baccalaureate-origin institutions of 1985-90 science and engineering (S&E) doctorate recipients who were American Indian U.S. citizen, by field of doctorate

Baccalaureate-origin institution	Total number of S&E doctorate recipients	Total science	Field of science							Total engineering
			Physical science 1/	Mathematics	Computer	Agricultural science	Biological science	Psychology	Social science	
University of California-Berkeley.....	9	8	1	1	1	1	2	0	2	1
University of Wisconsin-Madison.....	6	6	1	0	0	0	3	1	1	0
University of California-Davis.....	6	5	1	0	1	2	0	1	0	1
University of Michigan.....	5	4	1	0	0	0	0	2	1	1
University of Oklahoma.....	5	5	1	0	1	0	0	1	2	0
University of California-Santa Barbara.	5	5	1	0	0	0	1	2	1	0
Iowa State University.....	4	4	2	0	0	1	1	0	0	0
University of Arizona.....	4	4	0	0	0	0	1	0	3	0
Western Washington University.....	4	4	0	1	0	0	0	3	0	0
Harvard University (MA).....	3	2	1	0	0	0	0	0	1	1
Massachusetts Institute of Technology..	3	1	0	0	0	0	1	0	0	2
CUNY-Brooklyn College.....	3	3	1	0	0	0	0	2	0	0
Cornell University (NY).....	3	3	2	0	0	1	0	0	0	0
Pennsylvania State University.....	3	3	0	0	0	0	2	1	0	0
University of Miami (OH).....	3	3	0	0	0	0	0	2	1	0
Ohio State University.....	3	3	0	0	0	1	0	0	2	0
Ill, U, Urbana-Champaign.....	3	3	0	0	0	2	1	0	0	0
Michigan State University.....	3	3	0	0	0	1	1	1	0	0
University of Nebraska-Lincoln.....	3	3	1	0	0	0	0	0	2	0
Northeaster State University (OK).....	3	3	0	0	0	0	0	3	0	0
University of New Mexico.....	3	3	0	0	0	0	1	0	2	0
Oregon State University.....	3	3	0	0	0	1	1	0	1	0
California State University-Long Beach.	3	3	0	0	0	0	0	2	1	0
University of California-Los Angeles...	3	3	0	0	0	0	0	2	1	0
Total, top 24.....	93	87	13	2	3	10	15	23	21	6
Total, all institutions.....	274	245	46	3	6	17	56	70	47	29
Top 24 as a percent of all institutions.	34%	36%	28%	67%	50%	59%	27%	33%	45%	21%

1/ Includes earth, atmospheric, and oceanographic sciences.

NOTE: Rankings are based on the number of persons who responded to the Survey of Earned Doctorates.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Table 16. Top 23 baccalaureate-origin institutions of 1985-90 science and engineering (S&E) doctorate recipient who were black U.S. citizens, by field of doctorate

Baccalaureate-origin institution	Total number of S/E doctorate recipients	Total Science	Field of science							Total engineering
			Physical science 1/	Mathematics	Computer	Agricultural science	Biological science	Psychology	Social science	
*Howard University (DC)	53	49	4	0	0	1	6	20	18	4
*Spelman College (GA)	25	25	2	2	0	0	4	10	7	0
CUNY-City College	22	20	3	0	1	0	1	8	7	2
*Tuskegee University (AL)	22	19	0	0	1	3	11	2	2	3
*Hampton University (VA)	21	20	0	2	0	0	3	10	5	1
*Fisk University (TN)	21	21	3	0	0	1	3	10	4	0
Harvard University (MA)	20	17	1	0	0	0	1	10	5	3
*North Carolina Agricultural and Technical State University	20	18	1	0	0	2	3	6	6	2
*Jackson State University (MS)	18	18	3	0	0	2	8	2	3	0
*Southern University (LA)	17	14	2	1	0	0	4	3	4	3
University of Maryland	16	15	0	2	0	0	0	6	7	1
*Morehouse College (GA)	16	15	3	2	0	0	2	4	4	1
Massachusetts Institute of Technology	14	7	5	0	0	0	1	1	0	7
Princeton University (NJ)	14	13	2	0	0	0	2	9	0	1
*Tennessee State University	14	11	1	0	0	1	4	4	1	3
University of California-Berkeley	14	14	1	1	0	0	1	5	6	0
*Virginia State University	13	12	1	0	0	0	1	4	6	1
*North Carolina Central University	13	12	1	0	0	0	2	2	7	1
Brown University (RI)	12	10	1	0	0	0	3	6	0	2
Yale University (CT)	12	11	1	1	0	0	0	8	1	1
Cornell University (NY)	12	12	1	0	0	1	3	5	2	0
*Lincoln University (PA)	12	11	1	0	0	0	1	7	2	1
University of Michigan	12	11	1	0	1	0	0	5	4	1
Total, top 23	413	375	38	11	3	11	64	147	101	38
Total, all institutions	1534	1420	136	29	7	38	232	586	392	114
Top 23 as a percent of all institutions	27%	26%	28%	38%	43%	29%	28%	25%	26%	33%

1/ Includes earth, atmospheric, and oceanographic sciences.

* Historically black colleges and universities.

NOTE: Rankings are based on the number of persons who responded to the Survey of Earned Doctorates.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Table 17

Baccalaureate-origin institutions of 10 or more science and engineering doctorates, by major field(1): 1985-90

Institution of baccalaureate	Total sci & eng	Physical Sciences					Comp/ info sci	Agric & Biol Sci			Soc sci	Psych	Engineering(2)				Non-sci & eng(3)	Total all fields
		Sub-total	Physics astr	Chem istry	Earth/ atmos/ ocean	Math		Sub-total	Agri sci	Biol sci			Sub-total	Chem	Elec	Mech		
Calif, U-Berkeley	1526	248	149	99	71	51	33	425	41	384	289	191	218	52	63	28	550	2076
Cornell Univ/NY	1159	145	88	57	50	18	30	456	89	367	143	136	181	24	40	24	315	1474
Ill, U, Urbana-Champ	1108	138	65	73	31	15	26	342	100	242	89	135	332	56	94	49	443	1551
Michigan, Univ of	1105	124	43	81	45	19	30	298	24	274	166	194	229	36	45	28	587	1692
Mass Inst Technology	1028	281	198	83	46	54	54	127	1	126	53	13	400	62	123	50	40	1068
Penn State Univ	997	111	35	76	54	14	18	370	118	252	114	130	186	34	24	24	417	1414
Wisconsin,U-Madison	938	114	58	56	42	24	16	309	84	225	155	146	132	19	22	31	522	1460
Calif, U-Los Angeles	920	136	68	68	39	22	19	201	4	197	139	249	115	13	33	14	418	1338
Michigan State Univ	760	63	28	35	20	17	13	329	103	226	99	111	108	20	30	18	456	1216
Minnesota,U-Minneapl	754	87	46	41	24	18	10	252	85	167	109	121	133	37	17	21	411	1165
Rutgers Univ/NJ	746	112	21	91	33	11	3	273	54	219	73	153	88	12	13	10	298	1044
Harvard Univ/MA	740	119	92	27	23	48	42	208	6	202	166	92	42	4	10	6	297	1037
Calif, U-Davis	734	76	28	48	31	13	7	411	74	337	56	62	78	16	13	13	131	865
Purdue University/IN	715	92	29	63	24	4	17	238	84	154	44	46	250	39	66	35	227	942
Ohio State Univ	661	65	25	40	18	11	18	230	81	149	87	117	115	11	26	23	516	1177
Washington, U of	618	87	45	42	52	21	13	159	29	130	94	100	92	18	14	12	347	965
Texas, U-Austin	608	73	33	40	23	21	15	106	9	97	93	149	128	26	25	13	497	1105
Maryland, Univ of	597	72	39	33	21	16	12	203	38	165	78	100	95	12	27	17	352	949
Stanford Univ/CA	588	86	57	29	30	14	17	138	5	133	113	104	86	19	19	18	227	815
Pennsylvania, U of	566	65	32	33	15	8	13	145	2	143	112	139	69	29	11	4	275	841
Princeton Univ/NJ	538	119	92	27	31	47	21	94	1	93	73	57	96	34	22	8	174	712
Iowa State Univ	525	43	19	24	14	6	13	220	102	118	63	37	129	25	23	17	166	691
Florida, Univ of	520	50	19	31	10	17	6	162	53	109	60	120	95	14	18	16	327	847
Colorado, U-Boulder	518	63	31	32	22	19	7	125	9	116	112	96	74	18	19	7	267	785
Yale University/CT	512	87	51	36	23	15	22	139	2	137	102	92	32	7	6	1	286	798
SUNY at Buffalo	508	88	17	71	12	9	15	99	4	95	69	110	106	18	21	27	332	840
Mass, U of-Amherst	505	57	20	37	19	8	2	198	52	146	70	89	62	15	11	8	294	799
Brown University/RI	486	56	24	32	25	24	21	111	1	110	61	121	67	2	16	10	165	651
Calif, U-Santa Barb	476	41	16	25	33	15	5	160	11	149	89	87	46	8	10	15	245	721
Brigham Young U/UT	463	61	29	32	8	6	5	124	34	90	74	95	90	25	18	21	444	907
SUNY at Stony Brook	462	58	31	27	20	17	6	111	4	107	45	165	40	1	14	9	128	590
Calif, U-San Diego	460	78	40	38	26	18	5	141	4	137	55	74	63	7	11	4	90	550
VA Poly Inst&State U	435	35	9	26	22	5	9	138	45	93	21	30	175	23	26	44	101	536
Virginia, Univ of	434	64	31	33	14	15	12	86	2	84	61	66	116	21	23	18	164	598
Texas A&M University	428	46	19	27	16	7	4	169	79	90	23	25	138	19	21	26	129	557
Indiana U Bloomington	426	52	18	34	15	9	18	115	8	107	113	95	9	1	-	3	485	911
Delaware, Univ of	426	65	14	51	16	6	5	132	27	105	57	50	95	41	12	14	125	551
Duke University/NC	426	56	17	39	12	4	13	136	7	129	47	90	68	3	15	10	200	626
Rochester,Univ of/NY	424	73	33	40	36	7	4	125	5	120	30	99	50	17	10	5	179	603
Chicago, Univ of/IL	417	96	55	41	14	35	3	112	1	111	98	50	9	3	2	1	136	553
Northwestern Univ/IL	414	58	24	34	13	20	7	100	3	97	60	82	74	18	11	9	249	663
NC, U of-Chapel Hill	412	103	26	77	14	11	4	108	9	99	78	73	21	5	1	2	325	737
Missouri, U-Columbia	408	46	14	32	12	12	1	139	58	81	57	72	69	14	15	12	292	700
Colorado State Univ	383	27	4	23	7	7	1	200	70	130	45	51	43	6	8	6	143	526
Connecticut, Univ of	381	64	19	45	16	6	3	142	23	119	43	53	52	10	6	12	187	568
Cal Inst Technology	379	147	122	25	20	32	17	45	2	43	11	5	102	28	33	11	13	392
Arizona, Univ of	376	57	32	25	25	9	6	109	33	76	51	71	48	5	13	6	230	606
Calif, U-Santa Cruz	368	35	18	17	45	12	4	103	5	98	86	77	6	2	1	1	134	502
Rensselaer Poly I/NY	367	118	55	63	12	12	6	40	1	39	14	8	157	23	43	30	21	388
Kansas, Univ of	345	52	16	36	16	6	6	79	4	75	57	73	56	15	15	7	269	614
NC State U-Raleigh	345	48	15	33	8	12	1	128	46	82	10	22	116	19	16	24	64	409
SUNY at Binghamton	337	37	9	28	13	10	15	88	1	87	49	120	5	1	1	1	114	451
Boston University/MA	334	27	7	20	9	2	4	82	2	80	59	134	17	1	5	1	268	602
Calif,U-Irvine	334	72	33	39	3	11	21	98	2	96	40	70	19	-	13	-	74	408
Pittsburgh, Univ of	333	45	11	34	9	7	9	62	2	60	48	88	55	16	19	9	285	618
Oberlin College/OH	323	40	17	23	13	13	9	81	6	75	76	82	9	-	4	-	236	559
Washington Univ/MO	320	44	25	19	11	14	11	97	3	94	41	56	46	15	13	7	143	463
SUNY at Albany	317	46	8	38	16	8	11	88	4	84	37	81	10	2	2	1	179	496
Notre Dame, U of/IN	317	47	20	27	12	11	3	83	-	83	39	47	75	19	17	7	113	430
Iowa, University of	313	39	21	18	13	7	8	79	5	74	51	74	42	10	6	12	289	602
Johns Hopkins U/MD	305	57	21	36	6	11	10	117	1	116	25	31	48	8	2	3	79	384
Tenn, U-Knoxville	301	28	10	18	4	7	4	86	41	45	36	52	84	19	12	12	221	522
Columbia Univ/NY	299	46	29	17	9	15	13	59	1	58	43	55	59	15	10	13	169	468
Utah, Univ of	292	48	12	36	9	8	7	52	2	50	52	47	69	14	11	17	232	524
Nebraska, U-Lincoln	287	31	7	24	-	11	8	112	47	65	45	47	33	3	6	6	267	554
LA St Univ & A&M C	285	28	9	19	3	7	3	106	50	56	42	37	59	9	11	14	178	463
New York University	284	40	15	25	1	10	9	50	2	48	34	136	4	-	1	-	257	541
Case Westrn Rsrve/OH	280	77	34	43	9	9	8	37	3	34	22	32	86	20	16	11	104	384
Rice University/TX	275	67	42	25	11	25	22	41	-	41	18	20	71	23	21	7	43	318
Oklahoma State Univ	273	19	10	9	3	2	8	91	35	56	29	60	61	7	14	11	180	453
CUNY-Queens Coll	264	29	7	22	11	5	8	30	2	28	63	116	2	1	-	-	276	540
Carnegie Mellon U/PA	261	56	34	22	1	4	17	29	-	29	10	20	124	26	29	16	46	307
Kansas State Univ	259	13	6	7	3	4	2	138	62	76	25	21	53	11	12	9	159	418
Cincinnati, U of/OH	257	42	8	34	4	1	4	52	3	49	28	52	74	8	11	14	204	461
Georgia, Univ of	257	36	5	31	8	2	4	103	46	57	38	53	13	1	-	-	281	538
Florida State Univ	257	36	21	15	22	8	10	62	6	56	45	68	6	1	1	1	371	628
Carleton College/MN	255	71	28	43	24	9	5	72	6	66	39	29	6	-	1	1	67	322
William & Mary, C/VA	254	54	22	32	24	5	7	62	2	60	41	45	16	2	2	1	134	388
San Diego State U/CA	254	34	12	22	5	2	3	48	5	43	52	95	15	1	7	1	176	430
Dartmouth College/NH	253	39	19	20	36	16	8	61	-	61	45	29	19	-	5	4	122	375

See footnotes at end of table.

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Table 17

Baccalaureate-origin institutions of 10 or more science and engineering doctorates, by major field(1): 1985-90--continued

Institution of baccalaureate	Major field of doctorate																	
	Total sci & eng	Physical Sciences			Earth/ atmos/ ocean	Math	Comp/ info sci	Agric & Biol Sci			Soc sci	Psych	Engineering(2)				Non-sci & eng(3)	Total all flds
		Sub-total	Physics	Chemistry				Sub-total	Agri sci	Biol sci			Sub-total	Chem	Elec	Mech		
CUNY-City College	253	22	8	14	10	10	7	32	3	29	48	87	37	8	10	8	248	501
Calif, U-Riverside	252	38	7	31	19	7	1	89	22	67	44	46	8	2	1	-	76	328
Miami University/OH	249	40	9	31	9	5	1	84	6	78	45	54	11	2	1	-	226	475
Arizona State Univ	247	36	11	25	4	8	4	64	10	54	38	59	34	5	8	5	224	471
Brandeis Univ/MA	241	28	10	18	2	7	6	64	1	63	52	74	8	-	4	-	112	353
PR, U-Rio Piedras	241	71	13	58	2	7	2	59	7	52	49	39	12	4	2	2	297	538
Syracuse Univ/NY	240	35	9	26	9	4	7	53	2	51	36	59	37	7	7	3	200	440
CUNY-Brooklyn Coll	232	21	5	16	2	3	10	32	-	32	40	123	1	-	-	-	285	517
Illinois,U-Chicago	230	34	5	29	5	11	4	56	2	54	25	33	62	13	12	16	114	344
Auburn University/AL	229	18	9	9	3	6	4	85	36	49	15	38	60	4	14	7	176	405
Oregon State Univ	229	30	12	18	10	4	5	129	36	93	18	9	24	5	3	6	87	316
Tufts University/MA	228	30	11	19	8	4	1	47	-	47	29	81	28	2	5	5	95	323
Georgia Inst Tech	227	51	25	26	5	3	8	19	3	16	11	8	122	26	25	25	44	271
Swarthmore Coll/PA	226	40	27	13	10	6	3	42	1	41	64	41	18	1	6	1	83	309
Southern Ill Univ	226	22	8	14	6	3	-	94	33	61	43	36	22	-	8	3	288	514
Oklahoma, U of	226	26	13	13	4	3	4	50	1	49	41	46	52	13	12	8	195	421
Vanderbilt, U of	218	25	2	23	13	2	1	91	16	75	18	44	24	2	2	7	94	312
Texas Tech Univ	218	25	9	16	5	7	1	76	35	41	25	37	42	4	17	4	155	373
Southern Calif, U of	214	31	9	22	5	4	4	40	3	37	39	48	43	3	18	3	144	358
New Mexico, Univ of	213	44	21	23	11	8	2	39	3	36	44	36	29	6	3	5	161	374
Temple University/PA	206	25	8	17	1	3	2	50	2	48	39	80	6	1	2	1	260	466
Washington State U	205	18	5	13	3	5	4	94	30	64	33	16	32	5	6	4	91	296
Oregon, Univ of	202	29	7	22	11	6	3	48	5	43	49	52	4	1	2	1	173	375
West Virginia Univ	200	16	5	11	8	2	1	59	26	33	24	36	54	14	10	11	187	387
Hawaii, Univ of	198	20	8	12	8	6	1	59	11	48	48	31	25	-	11	2	117	315
Boston College/MA	196	37	7	30	6	6	3	40	1	39	49	48	7	2	2	-	194	390
Cal St U-Northridge	194	19	7	12	4	4	1	35	-	35	29	95	7	1	2	1	127	321
Miami, Univ of/FL	192	22	6	16	12	1	2	57	3	54	17	55	26	2	6	2	135	327
Reed College/OR	192	52	19	33	8	11	7	42	2	40	43	21	8	2	2	1	58	250
Kentucky, Univ of	191	16	-	16	5	5	1	74	33	41	27	29	34	5	8	8	139	330
Rhode Island, U of	190	21	4	17	11	3	3	80	21	59	15	39	18	4	2	7	78	268
Wellesley College/MA	189	21	8	13	11	2	1	49	1	48	47	54	4	1	-	1	146	335
Pomona College/CA	188	21	12	9	20	9	3	49	-	49	43	39	4	-	3	-	70	258
New Hampshire, U of	186	27	5	22	12	6	-	87	10	77	20	21	13	3	1	1	90	276
Geo Washington U/DC	184	13	5	8	3	1	2	39	2	37	51	52	23	1	4	4	106	290
Columbia-Barnard/NY	182	8	2	6	4	3	2	48	1	47	40	73	4	1	-	-	132	314
Wayne State Univ/MI	182	28	6	22	4	2	5	47	2	45	29	45	22	6	9	2	264	446
Cal St U-Long Beach	182	17	4	13	-	3	1	46	7	39	20	74	21	2	5	6	160	342
Lehigh University/PA	181	32	12	20	14	3	2	34	2	32	11	12	73	22	14	12	30	211
South Florida, U of	181	32	8	24	4	5	2	45	2	43	16	52	25	6	7	2	145	326
Clemson Univ/SC	179	24	9	15	2	3	3	73	28	45	16	15	43	10	9	2	76	255
Wesleyan Univ/CT	177	22	13	9	9	6	7	48	3	45	41	39	5	-	1	2	102	279
Humboldt State U/CA	176	17	4	13	19	5	1	97	35	62	12	7	18	1	-	1	44	220
Smith College/MA	174	16	2	14	5	2	1	60	3	57	46	42	2	1	-	-	139	313
San Francisc St U/CA	173	13	2	11	8	3	-	34	1	33	32	80	3	-	2	-	167	340
Vanderbilt Univ/TN	172	26	14	12	5	3	6	34	-	34	17	45	36	7	7	3	110	282
Bucknell Univ/PA	168	35	7	28	8	3	4	38	2	36	24	30	26	7	4	1	81	249
Arkansas,U-Fayettvle	168	17	6	11	5	1	3	59	33	26	21	21	41	12	9	5	116	284
Georgetown Univ/DC	164	17	6	11	1	-	1	22	3	19	80	41	2	-	1	-	127	291
Emory Univ/GA	160	30	5	25	4	3	3	48	1	47	9	62	1	1	-	-	88	248
Mississippi State U	160	8	2	6	4	5	4	70	39	31	13	11	45	3	11	3	133	293
Fordham Univ/NY	159	14	4	10	1	2	1	34	1	33	35	70	2	1	-	-	118	277
Ohio University	159	20	7	13	6	5	-	41	5	36	22	39	26	4	4	5	219	378
Houston, U of/TX	159	11	2	9	3	8	3	25	1	24	29	54	26	8	6	4	164	323
Utah State Univ	159	22	12	10	3	4	7	69	39	30	19	13	22	-	4	4	88	247
Wisconsin,U-Milwaukee	158	20	6	14	9	4	2	35	3	32	26	41	21	1	2	6	131	289
Northeastern U/MA	157	18	5	13	3	3	4	43	2	41	14	25	47	4	17	8	98	255
Maine, U-Orono	156	16	6	10	8	-	2	80	26	54	12	15	23	7	5	3	72	228
Northern Ill Univ	156	33	3	30	12	8	1	41	6	35	36	22	3	-	1	-	194	350
Cal Pol S U-SL Obisp	154	29	7	22	2	3	2	68	36	32	7	4	39	-	7	10	48	202
Loyola U Chicago/IL	153	30	2	28	-	2	2	37	1	36	12	66	4	1	-	1	114	267
Bowling Green S U/OH	150	18	2	16	8	5	7	39	2	37	25	47	1	-	-	-	196	346
South Carolina, U of	150	24	5	19	7	2	1	31	2	29	36	27	22	3	7	4	170	320
Clark University/MA	149	18	4	14	-	-	1	24	2	22	33	68	5	2	-	-	47	196
Montana State Univ	149	22	9	13	7	9	1	53	26	27	17	17	23	8	4	2	64	213
CUNY-Hunter College	147	10	6	4	4	6	4	20	1	19	32	70	1	-	-	-	266	413
Marquette Univ/WI	147	18	3	15	1	7	2	31	1	30	23	41	24	-	10	3	103	250
St Olaf College/MN	147	41	9	32	1	12	3	40	5	35	18	26	6	1	1	-	97	244
Williams College/MA	145	22	8	14	10	5	4	33	-	33	35	34	2	-	-	-	48	193
Kalamazoo College/MI	145	42	5	37	1	8	2	43	2	41	19	24	6	1	1	2	46	191
Vassar College/NY	144	10	5	5	4	5	2	34	2	32	35	51	3	-	-	1	106	250
San Jose State U/CA	144	16	2	14	6	2	2	30	2	28	26	39	23	6	2	-	154	298
Franklin&Marshal C/PA	143	33	7	26	17	1	1	27	-	27	20	35	9	-	3	1	43	186
Mt Holyoke Coll/MA	142	21	5	16	7	4	-	42	1	41	19	44	5	-	1	-	95	237
Michigan Tech Univ	142	16	4	12	9	5	2	25	8	17	-	-	85	14	11	18	13	155
New Mexico State U	142	11	5	6	7	4	4	69	43	26	10	9	28	3	13	7	44	186
Kent State Univ/OH	141	20	12	8	4	-	5	34	4	30	28	46	4	1	-	1	207	348
Alabama, Univer of	141	17	7	10	4	2	5	28	3	25	27	29	29	1	3	11	266	407
Tulane U of LA	138	11	4	7	4	5	6	38	1	37	19	30	25	7	4	5	59	197
Wyoming, Univ of	137	18	6	12	7	3	1	45	10	35	17	12	34	4	5	7	73	210

See footnotes at end of table.

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Table 17

Baccalaureate-origin institutions of 10 or more science and engineering doctorates, by major field(1): 1985-90---continued

Major field of doctorate

Institution of baccalaureate	Total sci & eng	Physical Sciences			Earth/ atmos/ ocean	Math	Comp/ info sci	Agric & Biol Sci			Soc sci	Psych	Engineering(2)				Non-sci & eng(3)	Total all flds
		Sub-total	Physl astr	Chem-istry				Sub-total	Agri sci	Biol sci			Sub-total	Chem	Elec	Mech		
Harvey Mudd Coll/CA	132	75	38	37	8	12	4	9	-	9	3	1	20	6	4	2	3	135
Colgate U/NY	131	26	5	21	17	3	2	35	2	33	22	25	1	-	-	-	64	195
Akron, U of/OH	131	22	7	15	5	1	1	23	1	22	12	26	41	14	6	13	115	246
Cal St U-Fullerton	131	18	4	14	4	3	2	19	-	19	24	60	1	-	-	-	116	247
Missouri,U-Rolla	130	21	10	11	5	2	3	3	-	3	1	2	93	21	12	7	7	137
Western Michigan U	128	12	3	9	6	6	3	33	2	31	23	38	7	-	1	1	177	305
Amherst College/MA	127	13	8	5	13	3	3	40	2	38	32	18	5	1	2	1	66	193
Illinois St U-Normal	126	24	1	23	1	4	5	37	8	29	24	29	2	-	-	-	209	335
Grinnell College/IA	126	33	6	27	2	6	3	35	1	34	24	19	4	2	-	1	48	174
Drexel University/PA	124	23	7	16	3	1	4	26	2	24	4	3	60	9	8	11	25	149
Haverford Coll/PA	122	19	12	7	7	5	2	31	1	30	25	26	7	-	2	3	48	170
Dayton, U of/OH	122	13	7	6	2	1	4	29	4	25	13	23	37	8	12	5	75	197
Cal St U-Fresno	120	15	7	8	5	1	4	31	11	20	19	32	13	-	2	2	126	246
Texas,U-Arlington	118	22	8	14	1	7	5	24	1	23	13	23	23	-	5	2	74	192
Idaho, Univ of	118	15	5	10	6	2	-	52	26	26	7	10	26	7	5	2	60	178
Cal St U-Los Angeles	118	12	3	9	2	3	1	12	-	12	32	51	5	-	1	-	168	286
US Military Academy	117	12	7	5	-	5	6	3	-	3	28	5	58	-	10	9	63	180
Montana, Univ of	117	10	3	7	8	1	2	49	20	29	23	23	1	-	-	-	65	182
USAF Academy/CO	117	22	13	9	2	4	6	6	-	6	12	11	54	-	12	3	30	147
Wheaton College/IL	116	22	7	15	5	5	2	25	5	20	14	41	2	-	1	-	167	283
Bryn Mawr Coll/PA	114	17	7	10	7	5	-	31	1	30	37	13	4	1	-	-	71	185
Antioch College/OH	114	11	4	7	4	2	2	28	2	26	27	33	7	2	3	1	53	167
Union College/NY	113	19	3	16	-	1	4	30	-	30	12	34	13	2	1	2	27	140
American Univ/DC	113	6	2	4	4	2	-	14	1	13	59	28	-	-	-	-	77	190
Howard University/DC	113	8	1	7	-	2	1	31	1	30	34	26	11	1	5	-	123	236
Baylor Univ/TX	111	21	6	15	6	1	1	27	3	24	19	34	2	-	-	-	243	354
Illinois Inst Tech	110	24	19	5	-	4	6	6	1	5	2	4	64	14	15	13	16	126
Hope College/MI	110	39	11	28	5	-	1	32	1	31	8	20	5	1	1	-	49	159
Western Washington U	110	21	9	12	11	4	2	26	3	23	23	22	1	-	-	-	81	191
Wooster, Coll of/OH	109	25	4	21	7	5	-	28	1	27	21	19	4	1	-	-	89	198
Macalester Coll/MN	109	11	4	7	6	2	1	26	4	22	32	27	4	-	-	1	63	172
Occidental Coll/CA	107	24	8	16	7	2	-	20	-	20	23	26	5	1	1	2	55	162
Wake Forest Univ/NC	105	20	5	15	-	6	2	27	-	27	20	22	8	1	3	1	96	201
Colorado College	104	12	5	7	12	2	2	27	1	26	24	22	3	1	1	-	43	147
Cal St U-Sacramento	104	14	2	12	2	4	1	14	3	11	20	34	15	-	5	2	102	206
St Louis Univ/MO	103	16	3	13	5	2	4	20	2	18	15	35	6	-	1	-	116	219
Clarkson Univ/NY	101	23	5	18	-	4	4	11	-	11	1	1	57	17	8	13	5	106
St Lawrence Univ/NY	101	12	1	11	9	1	1	35	1	34	14	25	4	-	-	-	41	142
Muhlenberg Coll/PA	101	23	4	19	3	2	-	40	3	37	5	23	5	-	1	-	27	128
Oakland Univ/MI	100	22	8	14	2	3	1	27	1	26	10	21	14	-	1	3	50	150
Worcester Poly I/MA	99	37	20	17	2	1	1	13	1	12	-	1	44	14	9	8	5	104
Hofstra Univ/NY	98	6	-	6	1	3	3	23	-	23	9	30	3	1	1	-	58	156
Indiana Univ of PA	98	23	5	18	6	3	1	31	1	30	15	18	1	-	-	-	161	259
North Texas, Univ of	98	4	3	1	-	1	3	24	2	22	20	43	3	-	1	1	228	326
Louisville, U of/KY	96	17	4	13	2	6	2	24	3	21	15	12	18	4	1	6	59	155
Cntrl Florida, U/FL	95	21	6	15	2	7	4	16	-	16	10	20	15	-	6	-	48	143
Bates College/ME	94	27	8	19	3	3	-	31	1	30	14	11	5	-	-	-	28	122
Holy Cross, C of/MA	94	27	4	23	-	2	1	25	1	24	11	24	4	-	-	-	52	146
Sthrn Methodist U/TX	94	8	3	5	4	2	1	8	-	8	20	32	19	2	6	1	94	188
Lowell, Univ of/MA	93	48	17	31	6	1	2	11	-	11	2	3	20	2	3	4	25	118
St Johns U-Queens/NY	93	4	1	3	1	1	1	31	1	30	14	39	2	-	1	-	96	189
Calvin College/MI	93	25	7	18	-	2	4	29	4	25	8	20	3	-	2	-	94	187
Middlebury Coll/VT	92	10	4	6	13	7	2	30	5	25	16	13	1	-	-	-	61	153
Allegheny College/PA	92	28	2	26	9	3	2	26	2	24	7	16	1	1	-	-	45	137
North Dakota St Univ	92	16	2	14	7	2	-	34	20	14	6	13	14	1	1	4	54	146
Cal St Poly-Pomona	91	10	4	6	5	2	2	40	12	28	10	10	12	1	4	1	55	146
Davidson College/NC	90	27	6	21	-	2	1	16	1	15	15	23	6	-	1	1	55	145
Manhattan College/NY	89	15	5	10	2	-	3	24	-	24	6	17	22	4	7	1	41	130
Central Michigan U	89	18	-	18	-	3	2	31	1	30	17	17	1	1	-	-	130	219
Wisconsin,U-Steven Pt	89	8	3	5	4	2	-	42	13	29	9	18	6	-	-	-	39	148
Bowdoin College/ME	88	19	6	13	2	3	1	33	1	32	16	8	6	-	2	-	32	120
Cleveland St Univ/OH	87	29	6	23	2	1	2	11	1	10	9	15	18	7	3	4	40	127
Missouri,U-St Louis	87	19	3	16	1	6	-	20	1	19	10	27	4	-	1	1	45	132
North Dakota, U of	87	15	2	13	3	1	-	13	1	12	17	21	17	2	5	1	69	156
SUNY Coll Oswego	86	21	2	19	4	2	1	25	2	23	15	17	1	-	-	-	68	154
Eastern Ill Univ	84	11	2	9	1	2	-	45	14	31	10	13	2	-	-	-	120	204
Furman Univ/SC	84	29	2	27	5	4	2	10	2	8	16	18	-	-	-	-	74	158
Florida Atlantic U	84	12	7	5	2	1	3	12	-	12	17	25	12	-	2	2	65	149
Fairfield Univ/CT	83	22	5	17	-	3	-	32	-	31	8	18	1	-	1	-	24	107
Villanova Univ/PA	83	14	6	8	2	-	1	30	2	28	9	17	10	3	2	2	81	164
Wichita St Univ/KS	83	15	6	9	-	4	1	15	-	15	16	13	19	-	5	6	88	171
New Orleans,U of/LA	83	9	2	7	5	4	4	16	3	13	15	21	9	1	2	2	53	136
Colby College/ME	82	17	8	9	8	2	-	26	-	26	14	13	2	-	-	-	41	123
St. Josephs Univ/PA	82	25	3	22	-	3	-	21	-	21	17	16	-	-	-	-	50	132
Columbia U-Col C/NY	81	17	14	3	3	4	3	23	2	21	16	11	4	1	-	-	44	125
Youngstown St U/OH	81	10	1	9	2	1	2	15	-	15	10	24	17	7	5	1	97	178
VA Commonwealth Univ	81	17	2	15	1	2	-	20	1	19	9	30	2	-	-	-	75	156
Santa Clara Univ/CA	81	21	6	15	1	8	2	13	-	13	15	12	9	1	2	4	34	115
Mass, U-Boston	80	13	3	10	-	2	3	19	3	16	14	28	1	-	-	-	80	168
DePauw University/IN	80	14	1	13	3	-	-	19	-	19	15	26	3	-	1	-	73	153

See footnotes at end of table.

Table 17

Baccalaureate-origin institutions of 10 or more science and engineering doctorates, by major field(1): 1985-90--continued

Institution of baccalaureate	Total sci & eng	Physical Sciences			Earth/ atmos/ ocean	Math	Comp/ info sci	Agric & Biol Sci			Soc sci	Psych	Engineering(2)				Non-sci & eng(3)	Total all flds
		Sub-total	Physl astr	Chem-istry				Sub-total	Agri sci	Biol sci			Sub-total	Chem	Elec	Mech		
Beloit College/WI	80	10	5	5	7	1	1	19	1	18	24	17	1	-	1	-	43	123
Catholic U Amer/DC	80	18	9	9	2	2	1	15	1	14	6	16	20	2	6	3	77	157
Nevada, Univ of	80	7	2	5	7	3	2	31	8	23	10	12	8	1	-	1	33	113
PR, U-Mayaguez	80	16	3	13	2	2	-	27	10	17	5	2	26	2	6	3	22	102
Dickinson Coll/PA	79	21	7	14	8	2	1	19	1	18	9	17	2	1	-	-	42	121
Wright State Univ/OH	79	16	9	7	1	1	1	24	-	24	7	20	9	-	2	2	44	123
Cal St U-Chico	79	6	-	6	4	2	-	24	6	18	18	21	4	1	1	-	84	163
SUNY Envr Sci Frstry	78	11	1	10	6	-	-	54	17	37	1	-	6	1	-	-	6	84
Denison Univ/OH	78	9	2	7	3	1	1	17	1	16	16	27	4	-	1	1	53	131
South Dakota State U	78	7	3	4	2	3	-	38	18	20	6	7	15	-	3	2	53	131
Towson State U/MD	78	13	2	11	2	3	-	16	3	13	16	28	-	-	-	-	84	162
Colorado Sch Mines	78	19	10	9	16	2	-	1	-	1	2	-	38	9	4	1	1	79
SUNY Coll Oneonta	77	18	1	17	5	2	1	15	-	15	13	19	4	3	-	-	61	138
Earlham College/IN	77	10	5	5	6	3	-	27	2	25	13	18	-	-	-	-	45	122
Texas, U-El Paso	77	6	3	3	4	5	1	14	3	11	8	23	16	-	3	4	85	162
Radcliffe C/MA	76	5	3	2	1	3	-	18	-	18	26	21	2	-	-	-	63	139
Toledo, Univ of/OH	76	10	5	5	3	2	1	14	1	13	8	19	19	5	3	2	105	181
Denver, Univ of/CO	76	8	4	4	2	2	3	11	2	9	19	27	4	-	2	-	73	149
Memphis State U/TN	75	11	4	7	-	-	1	21	2	19	13	21	8	-	3	2	118	193
SUNY Coll Potsdam	74	21	4	17	6	2	3	24	-	24	10	5	3	1	1	-	53	127
Gettysburg Coll/PA	74	18	7	11	1	1	2	23	6	17	5	19	5	-	1	-	36	110
La Salle Univ/PA	74	17	7	10	-	1	2	18	2	16	11	21	4	2	1	-	52	126
SW Missouri St Univ	74	14	2	12	-	3	1	23	6	17	9	22	2	-	-	-	104	178
Old Dominion Univ/VA	74	11	4	7	6	3	3	13	1	12	17	10	11	1	2	4	90	164
Charleston, C of/SC	74	24	2	22	1	4	-	25	1	24	5	14	1	-	-	-	16	90
Hampshire Coll/MA	73	5	3	2	-	2	1	17	2	15	22	25	1	-	-	1	31	104
Portland State U/OR	73	5	-	5	4	1	1	15	1	14	27	14	6	-	1	3	82	155
Trinity College/CT	72	15	2	13	1	-	1	20	-	20	9	19	7	-	3	1	41	113
Alfred University/NY	72	4	2	2	1	1	-	9	1	8	4	8	45	-	-	-	22	94
Wittenberg Univ/OH	72	15	3	12	4	1	1	23	4	19	17	7	4	1	1	-	66	138
Creighton Univ/NE	72	14	3	11	-	4	-	13	-	13	11	26	4	1	3	-	36	108
Georgia State Univ	72	11	3	8	4	2	-	11	1	10	19	22	3	-	-	-	104	176
Kenyon College/OH	71	19	5	14	-	3	2	18	1	17	16	10	3	1	-	-	41	112
Southern Miss, U of	71	11	1	10	-	-	4	15	2	13	6	33	2	-	1	-	151	222
Southeastern LA, U of	71	6	5	1	1	8	8	14	6	8	7	13	14	1	2	5	54	125
SUNY Coll Cortland	70	11	3	8	3	4	-	20	1	19	12	18	2	-	-	-	89	159
Lafayette College/PA	70	11	5	6	2	2	-	20	2	18	3	11	21	5	6	2	26	96
Western Illinois U	70	13	1	12	5	2	-	29	14	15	10	7	4	-	2	-	99	169
Tennessee Tech U	70	5	1	4	3	1	5	14	9	5	2	5	35	2	7	12	48	118
Millersville U of PA	69	14	3	11	7	2	-	29	6	23	5	9	3	1	-	-	84	153
NC, U of-Greensboro	69	12	-	12	-	4	-	12	-	12	15	26	-	-	-	-	113	182
Northern Arizona U	69	17	1	16	6	1	2	23	3	20	4	13	3	-	-	3	88	157
Polytechnic Univ/NY	68	16	7	9	2	3	5	3	-	3	-	1	38	4	12	5	6	74
SUNY Coll Brockport	68	15	3	12	5	1	2	21	3	18	7	17	-	-	-	-	88	156
Wisconsin,U-E Claire	68	20	4	16	5	1	3	16	2	14	5	12	6	2	-	-	71	139
Connecticut College	67	4	-	4	1	1	1	18	1	17	15	24	3	-	1	1	55	122
James Madison U/VA	67	17	3	14	-	-	3	14	2	12	10	18	5	-	1	-	69	136
New Coll-South Fla U	67	10	1	9	2	5	1	16	-	16	9	21	3	-	-	-	14	81
Mississippi, Univ of	67	8	4	4	-	3	-	19	3	16	11	13	13	1	4	1	79	146
Adelphi Univ/NY	66	5	-	5	3	-	-	20	2	18	8	30	-	-	-	-	93	159
SUNY Coll Fredonia	66	17	1	16	3	1	1	19	2	17	12	12	1	-	-	-	64	130
Stevens Inst Tech/NJ	56	23	13	10	2	6	4	8	-	8	1	-	22	5	5	2	5	71
Scranton, U of/PA	66	16	-	16	1	1	-	28	2	26	3	16	1	-	-	1	33	99
Missouri,U-Kans City	66	8	5	3	3	2	2	17	5	12	9	25	-	-	-	-	54	120
Cal St U-Hayward	66	18	2	16	2	1	2	18	2	16	16	8	1	-	-	-	32	118
Ball State Univ/IN	65	6	2	4	2	1	1	12	3	9	16	25	2	-	-	-	185	250
Valparaiso Univ/IN	65	11	4	7	-	-	-	14	1	13	10	19	11	1	2	5	65	130
St Johns Univ/MN	65	21	4	17	2	6	-	20	5	15	5	7	4	1	-	-	40	105
Tulsa, Univ of/OK	65	4	3	1	2	-	1	6	-	6	12	16	24	3	1	4	74	139
Providence Coll/RI	64	15	1	14	-	2	-	16	-	16	5	25	1	-	1	-	33	97
Fairleigh Dicks U/NJ	64	13	1	12	2	1	2	17	1	16	4	24	1	-	1	-	45	109
SE Mass U-N Dartmouth	63	12	-	12	3	-	1	19	-	19	11	9	8	-	-	2	19	82
SUNY Coll Plattsburg	63	12	1	11	1	2	-	20	1	19	9	12	7	-	3	-	60	123
Juniata College/PA	63	23	2	21	2	1	-	21	2	19	2	13	1	-	-	-	28	91
John Carroll Univ/OH	63	15	7	8	1	5	2	16	-	16	14	10	-	-	-	-	30	93
Gustav Adolphus C/MN	63	18	2	16	3	2	-	17	1	16	5	16	2	-	1	-	28	91
S F Austin St U/TX	63	9	4	5	1	3	2	30	10	20	3	14	1	-	1	-	73	136
South Dakota, U of	62	8	-	8	1	2	2	17	2	15	9	19	4	-	2	-	73	135
Rhodes College/TN	62	13	4	9	1	-	2	15	-	15	6	22	3	-	2	1	11	93
Seton Hall Univ/NJ	61	12	2	10	1	1	-	17	2	15	5	24	1	1	-	-	74	135
Lawrence Univ/WI	61	11	4	7	3	1	2	23	2	21	9	11	1	-	1	-	68	129
US Naval Academy/MD	61	7	6	1	7	1	1	2	2	-	12	3	28	-	7	7	15	96
George Mason U/VA	61	11	5	6	-	3	1	21	-	21	12	13	-	-	-	-	30	91
Hamilton College/NY	60	8	3	5	6	2	1	15	1	14	12	15	1	-	-	-	42	102
Ohio Wesleyan Univ	60	6	1	5	1	-	2	22	2	20	11	16	2	-	-	-	62	122
Xavier Univ/OH	60	20	6	14	1	2	2	12	-	12	8	9	6	-	2	-	29	89
Puget Sound, U of/WA	60	16	3	12	4	3	-	18	-	18	5	11	3	-	-	-	31	91
Whitman College/WA	60	16	4	12	3	3	-	16	6	10	12	8	2	-	2	-	22	82
Bradley Univ/IL	59	15	1	14	2	1	2	8	1	7	8	12	11	-	2	5	50	109
Knox College/IL	59	12	1	11	4	5	2	17	2	15	10	8	1	-	-	1	12	91

See footnotes at end of table.

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Table 17

Baccalaureate-origin institutions of 10 or more science and engineering doctorates, by major field(1): 1985-90—continued

Institution of baccalaureate	Total sci & eng	Physical Sciences			Earth/ atmos/ ocean	Math	Comp/ info sci	Agric & Biol Sci			Soc sci	Psych	Engineering(2)				Non-sci & eng(3)	Total all flds
		Sub-total	Physics astr	Chemistry				Sub-total	Agri sci	Biol sci			Sub-total	Chem	Elec	Mech		
Florida Inst Tech	59	8	5	3	13	-	1	23	4	19	1	1	12	1	5	1	5	64
Western Kentucky U	59	20	6	14	1	2	-	15	4	11	7	12	2	-	-	-	72	131
CUNY-Hrbert Lehman C	58	3	2	1	-	-	-	17	3	14	10	28	-	-	-	-	59	117
Cooper Union/NY	58	6	5	1	3	3	4	5	-	5	1	2	34	13	8	7	4	62
Augustana Coll/IL	58	14	1	13	4	1	1	19	1	18	7	8	4	-	1	-	42	100
Northern Colorado,U	57	8	-	8	3	-	1	15	6	9	8	21	1	-	-	-	133	190
Montclair St Coll/NJ	56	6	-	6	1	5	2	11	-	11	9	20	2	-	1	-	98	154
Wabash College/IN	56	15	2	13	1	3	1	24	3	21	5	6	1	-	-	-	15	71
Texas Christian Univ	56	10	2	8	4	-	-	15	-	15	11	16	-	-	-	-	116	172
Maryland,U-Balt Cnty	55	18	7	11	-	2	-	14	1	13	5	13	3	-	1	-	19	74
Louisiana Tech Univ	55	4	3	1	-	1	2	12	4	8	2	8	26	1	4	6	65	120
Trinity Univ/TX	55	6	1	5	3	1	-	11	-	11	6	27	1	-	1	-	47	102
Albright College/PA	54	18	-	18	-	-	1	23	1	22	4	7	1	-	-	-	20	74
Wisconsin,U-River Fls	54	17	7	10	1	-	1	18	12	6	6	7	4	-	1	-	25	79
Northern Iowa, U of	54	19	3	16	1	-	1	7	-	7	10	15	1	-	-	-	127	181
Abilene Christ U/TX	54	17	6	11	-	2	2	16	3	13	5	11	1	-	1	-	63	117
Calif,U-S Diego, Med	54	13	6	7	-	1	2	17	-	17	2	15	4	-	2	-	10	64
Robert Wm Smith C/NY	53	4	1	3	2	-	1	20	-	20	12	13	1	-	-	-	36	89
LIU-Southampton C/NY	53	9	-	9	11	-	-	26	1	25	3	3	1	-	-	-	5	58
Ithaca College/NY	52	18	1	17	-	-	2	14	-	14	8	10	-	-	-	-	64	116
Rose-Hulman Tech/IN	52	17	4	13	-	2	2	2	-	2	-	-	29	9	9	5	1	53
Wisconsin,U-Oshkosh	52	8	5	3	6	1	-	12	3	9	10	15	-	-	-	-	44	96
East Carolina U/NC	52	6	2	4	1	-	3	13	2	11	8	20	1	-	-	-	103	155
Sonoma State Univ/CA	52	8	6	2	3	4	-	7	-	7	14	15	1	-	-	-	26	78
Sarah Lawrence C/NY	51	1	1	-	1	2	-	4	-	4	14	29	-	-	-	-	52	103
Ursinus College/PA	51	19	3	16	1	2	-	13	-	13	4	5	7	2	1	-	15	66
Eastern Michigan U	51	13	2	11	-	-	-	18	2	16	6	12	2	1	-	-	112	163
Richmond, U of/VA	51	7	1	6	-	-	1	17	-	17	10	14	2	-	-	-	51	102
Houghton Coll/NY	50	12	-	12	1	2	2	17	2	15	7	7	2	1	-	-	36	86
Albion College/MI	50	14	5	9	6	1	1	17	1	16	7	3	1	-	-	-	33	83
Evergreen St Coll/WA	49	1	1	-	7	-	-	20	2	18	10	11	-	-	-	-	19	68
Detroit Mercy, U/MI	48	7	2	5	-	-	-	8	-	8	5	13	15	1	2	3	66	114
Pacific, U of/CA	48	4	3	1	3	-	1	11	-	11	8	18	3	-	-	-	41	89
St Bonaventure U/NY	47	2	-	2	-	1	1	15	-	15	9	19	-	-	-	-	41	88
Minnesota,U-Duluth	47	11	-	11	5	1	-	17	2	15	8	1	4	1	2	-	22	69
Eckerd College/FL	47	8	1	7	-	3	1	8	1	7	9	17	1	-	-	-	33	80
N Mex I Mining&Tech	47	14	6	8	8	4	-	5	-	5	3	2	11	3	1	1	1	48
Weber State Coll/UT	47	6	2	4	1	-	1	14	1	13	11	11	3	-	-	1	52	99
Simmons College/MA	46	7	-	7	1	-	-	15	-	15	6	17	-	-	-	-	54	100
SUNY Coll New Paltz	46	2	1	1	2	1	1	10	1	9	11	16	3	1	-	1	48	94
SUNY Coll Purchase	46	5	-	5	-	2	-	13	-	13	7	17	2	1	-	-	16	62
Drake Univ/IA	46	5	2	3	-	1	-	17	-	17	13	8	2	-	-	-	69	115
Marshall Univ/WV	46	10	3	7	-	-	1	14	1	13	11	7	3	-	2	-	76	122
Central State U/OK	46	6	4	2	-	1	-	3	-	3	2	34	-	-	-	-	72	118
SUNY Coll Geneseo	45	9	2	7	2	-	1	18	1	17	8	6	1	-	-	1	57	102
Drew University/NJ	45	8	-	8	-	1	-	18	3	15	10	7	1	-	-	-	31	76
St Thomas, U of/MN	45	19	2	17	2	1	-	6	-	6	9	7	1	-	-	1	34	79
Canisius College/NY	44	13	1	12	1	-	1	16	-	16	4	9	-	-	-	-	24	68
SE Missouri St Univ	44	5	-	5	1	2	4	11	-	11	6	15	-	-	-	-	81	125
NC, U of-Charlotte	44	6	1	5	-	3	-	9	-	9	3	12	11	-	3	1	24	68
Florida Internat'l U	44	8	2	6	-	1	1	7	1	6	10	14	3	-	1	-	53	97
Loyola University/LA	44	5	4	1	1	2	3	5	-	5	5	22	1	-	1	-	22	66
Grove City Coll/PA	43	8	-	8	-	1	2	14	1	13	7	5	6	1	2	1	41	84
Wilkes University/PA	43	13	3	10	1	2	-	8	-	8	4	8	7	-	1	-	29	72
DePaul University/IL	43	10	4	6	2	-	-	8	1	7	7	14	2	-	-	1	70	113
Luther College/IA	43	8	1	7	-	2	3	15	3	12	4	9	2	1	-	1	77	120
Nebraska,U-Omaha	43	9	3	6	1	-	1	11	1	10	6	15	-	-	-	-	111	154
Goucher College/MD	43	7	-	7	-	-	-	9	-	9	9	18	-	-	-	-	35	78
Eastern Kentucky U	43	6	5	1	-	2	3	17	5	12	8	5	2	-	1	-	58	101
Arkansas State Univ	43	5	3	2	1	3	3	16	5	11	9	4	2	-	-	-	59	102
Loyola Marymnt U/CA	43	5	1	4	1	2	-	12	-	12	11	8	4	-	3	-	33	76
San Francsco,U of/CA	43	6	3	3	1	2	2	9	-	9	7	16	-	-	-	-	60	103
Southern Conn St Univ	42	7	2	5	2	-	-	16	1	15	3	13	1	-	-	-	68	110
Gannon Univ/PA	42	14	4	10	1	2	3	10	1	9	2	6	4	-	1	2	28	70
Moravian College/PA	42	8	2	6	1	1	6	13	-	13	7	5	1	1	-	-	20	62
Butler Univ/IN	42	7	-	7	-	1	2	11	-	11	5	13	3	-	1	-	55	97
So Ill U/Edwardsvill	42	9	-	9	-	1	-	7	-	7	8	14	3	-	1	-	70	112
Wisc, U-Green Bay	42	7	-	7	3	1	2	11	1	10	7	9	2	-	-	-	14	56
St. Cloud State U/MN	42	12	1	11	2	1	1	8	2	6	8	10	-	-	-	-	59	101
Murray State Univ/KY	42	10	3	7	2	1	-	16	6	10	4	6	1	-	-	-	81	123
LIU-C W Post Cmps/NY	41	4	-	4	3	3	-	10	-	10	2	19	-	-	-	-	35	76
Duquesne Univ/PA	41	5	-	5	1	-	-	9	-	9	4	21	1	-	-	-	137	178
Lebanon Valley C/PA	41	10	1	9	1	2	-	14	2	12	3	9	2	1	-	-	29	70
Shippensburg U of PA	41	14	-	14	-	1	-	14	3	11	2	9	1	-	-	-	56	97
Northern Michigan U	41	5	3	2	-	2	1	13	2	11	8	12	-	-	-	-	51	92
Wisconsin,U-L Crosse	41	13	-	13	-	-	1	11	-	11	9	6	1	-	-	-	54	95
Bemidji State U/MN	41	4	1	3	1	2	-	14	2	12	8	11	1	-	-	-	30	71
Ctrl Missouri St U	41	4	1	3	1	-	1	12	1	11	7	14	2	-	-	1	77	118
Loyola College/MD	41	5	2	3	1	2	2	18	1	17	1	6	6	-	1	1	29	70
Tuskegee Univ/AL	41	1	-	1	-	-	1	30	15	15	3	2	4	-	2	1	63	104

See footnotes at end of table.

Table 17

Baccalaureate-origin institutions of 10 or more science and engineering doctorates, by major field(1): 1985-90—continued

Institution of baccalaureate	Major field of doctorate																	
	Total sci & eng	Physical Sciences			Earth/ atmos/ ocean	Math	Comp/ info sci	Agric & Biol Sci			Soc sci	Psych	Engineering(2)				Non-sci & eng(3)	Total all flds
		Sub-total	Physs astr	Chem-istry				Sub-total	Agri sci	Biol sci			Sub-total	Chem	Elec	Mech		
Cal St Univ-Carson	41	8	1	7	-	-	1	4	1	3	13	12	3	-	2	-	35	76
Bridgeport, U of/CT	40	8	1	7	-	-	-	7	-	7	9	10	6	-	1	3	38	78
Rochester I Tech/NY	40	17	5	12	1	2	1	8	-	8	-	1	10	-	-	4	15	55
Siena College/NY	40	7	1	6	-	2	-	15	-	15	4	8	4	2	-	-	15	55
Indiana State Univ	40	4	3	1	-	-	-	6	-	6	12	17	1	-	-	-	107	147
Concordia-Moorhead/MN	40	12	6	6	-	1	2	11	2	9	1	11	2	1	-	-	42	82
Hamline Univ/MN	40	11	-	11	-	1	-	12	-	12	4	12	-	-	-	-	27	67
Guilford Coll/NC	40	5	1	4	4	2	-	12	1	11	6	11	-	-	-	-	23	63
South, Univ of/TN	40	8	3	5	2	4	-	13	4	9	4	8	1	-	-	-	27	67
Alabama,U-Birmingham	40	3	-	3	1	4	-	11	1	10	6	8	7	-	2	1	46	86
Skidmore College/NY	39	2	-	2	-	1	-	12	-	12	5	17	2	-	-	1	40	79
West Chester U of PA	39	15	1	14	2	3	-	4	-	4	5	10	-	-	-	-	121	160
Hiram College/OH	39	6	1	5	-	1	1	14	1	13	5	11	1	-	-	-	31	70
Western Maryland Col	39	12	1	11	-	1	-	13	-	13	3	8	2	-	-	-	36	75
Bard College/NY	38	4	1	3	-	2	-	9	-	9	9	14	-	-	-	-	19	57
St Peters Coll/NJ	38	6	1	5	-	-	-	14	-	14	6	12	-	-	-	-	29	67
Slippery Rock U/PA	38	3	-	3	1	2	-	20	3	17	7	5	-	-	-	-	77	115
Grand Valley St U/MI	38	6	-	6	5	-	1	7	1	6	10	8	1	-	-	1	28	66
Mankato State U/MN	38	14	6	8	1	2	-	4	2	2	9	7	1	-	-	-	63	101
Berea College/KY	38	8	-	8	1	2	-	11	5	6	10	4	2	-	-	-	50	88
Marietta College/OH	37	13	1	12	-	2	-	8	1	7	7	6	1	-	-	-	20	57
Andrews Univ/MI	37	9	1	8	-	-	1	13	2	11	5	9	-	-	-	-	47	84
Lewis & Clark C/OR	37	5	2	3	-	1	-	14	2	12	5	11	1	-	-	1	38	75
Le Moyne College/NY	36	6	-	6	-	2	-	14	2	12	6	7	1	-	-	-	33	69
Delaware Valley C/PA	36	4	-	4	-	-	-	32	20	12	-	-	-	-	-	-	5	41
Kings College/PA	36	17	-	17	-	-	-	4	1	3	4	10	1	-	-	-	29	65
Michigan,U-Dearborn	36	8	3	5	-	1	-	9	-	9	3	6	9	2	2	1	9	45
Hendrix College/AR	36	8	2	6	-	5	-	16	2	14	4	2	1	-	-	-	29	65
NE Louisiana Univ	36	8	2	6	1	2	-	8	1	7	9	8	-	-	-	-	50	86
Idaho State Univ	36	7	3	4	2	2	-	13	-	13	2	8	2	-	-	-	43	79
Eastern Wash Univ/WA	36	6	3	3	-	1	2	8	3	5	9	9	1	-	-	-	41	77
Pitzer College/CA	36	2	1	1	-	-	-	10	1	9	6	17	1	-	-	-	19	55
Redlands, U of/CA	36	3	1	2	1	2	-	5	1	4	9	15	1	-	1	-	54	90
Rutgers U-Newark/NJ	35	5	2	3	-	1	-	11	1	10	8	10	-	-	-	-	18	53
Central Univ of Iowa	35	10	2	8	-	3	-	11	1	10	7	4	-	-	-	-	14	49
Augustana Coll/SD	35	8	-	8	-	2	1	13	2	11	8	2	1	-	-	-	30	65
Washington&Lee U/VA	35	10	1	9	5	3	-	8	-	8	3	6	-	-	-	-	24	59
Middle Tenn State U	35	3	-	3	-	2	1	16	7	9	6	5	2	-	-	-	67	102
Loma Linda Univ/CA	35	4	1	3	2	-	1	15	1	14	6	7	-	-	-	-	34	69
Yeshiva Univ/NY	34	5	5	-	-	-	-	4	-	4	6	18	1	-	1	-	24	58
Ohio Northern Univ	34	9	-	9	-	-	-	7	1	6	6	4	8	-	5	-	23	57
Manchester Coll/IN	34	9	-	9	-	1	-	8	1	7	7	8	1	-	-	-	26	60
S Dakota S Mines&Tech	34	8	2	6	1	-	2	2	-	2	-	-	21	3	5	3	2	36
South Alabama, U	34	4	-	4	-	4	2	12	-	12	-	9	3	1	-	1	41	75
Austin College/TX	34	5	2	3	1	1	-	8	-	8	5	12	2	-	-	2	25	59
Lamar University/TX	34	6	4	2	1	1	-	9	1	8	4	6	7	1	1	3	65	99
Iona College/NY	33	7	1	6	-	-	-	4	-	4	7	15	-	-	-	-	38	71
St John Fisher C/NY	33	14	3	11	-	1	-	6	-	6	5	7	-	-	-	-	20	53
Phila C Pharm&Sci/PA	33	10	-	10	1	-	-	22	-	22	-	-	-	-	-	-	14	47
Moorhead State U/MN	33	-	-	-	2	3	1	8	3	5	9	9	1	-	-	-	46	79
Randolph-Macn Wom/VA	33	4	-	4	-	1	-	12	-	12	4	12	-	-	-	-	24	57
West Florida, U of	33	14	1	13	-	-	2	5	-	5	3	9	-	-	-	-	47	80
Centre College/KY	33	6	2	4	-	3	-	15	1	14	4	4	1	-	-	1	24	57
Tenn, U-Martin	33	5	-	5	-	1	-	20	10	10	4	2	1	-	1	-	27	60
Sthrn ME U/Portland	32	2	-	2	1	-	1	3	-	3	7	18	-	-	-	-	31	63
New Jersey Inst Tech	32	2	2	-	-	1	1	-	-	-	1	-	27	7	5	5	6	38
Wm Paterson C of NJ	32	6	1	5	1	1	-	6	-	6	6	12	-	-	-	-	49	81
Goshen College/IN	32	6	3	3	-	1	-	13	3	10	2	6	4	1	-	-	36	68
Carroll College/WI	32	7	-	7	1	-	-	11	1	10	4	9	-	-	-	-	22	54
Wisconsin,U-Plattvil	32	6	2	4	1	-	-	13	10	3	2	4	6	-	-	-	12	44
Appalachian St U/NC	32	8	3	5	1	1	-	10	1	9	6	5	1	-	-	-	118	150
Thomas More Coll/KY	32	11	7	4	-	-	-	12	1	11	1	6	2	-	1	-	18	50
Harding University/AR	32	3	1	2	1	1	2	3	2	1	2	18	2	-	-	-	59	91
Dallas, Univ of/TX	32	10	5	5	-	5	-	5	-	5	6	6	-	-	-	-	23	55
SW Texas State Univ	32	6	1	5	-	3	1	11	1	10	5	6	-	-	-	-	91	123
West Texas State U	32	2	-	2	-	2	1	13	5	8	9	4	1	-	-	-	44	76
Alaska, Univ of	32	4	1	3	4	1	-	9	1	8	6	5	3	-	1	1	16	48
Trenton St Coll/NJ	31	6	-	6	-	-	1	10	1	9	5	8	1	-	-	-	89	120
Edinboro U of Penn	31	3	-	3	-	-	-	12	1	11	4	9	3	-	1	-	60	91
Wash&Jefferson C/PA	31	7	2	5	-	-	-	14	-	14	3	4	3	1	-	-	10	41
Roosevelt Univ/IL	31	1	-	1	-	1	1	1	-	1	13	12	2	-	-	-	69	100
Nebraska Wesleyan U	31	7	1	6	-	-	1	9	2	7	2	10	2	-	1	-	31	62
Fort Hays State U/KS	31	3	2	1	1	-	-	12	6	6	7	8	-	-	-	-	50	81
Emporia St Univ/KS	31	6	2	4	-	-	1	10	-	10	8	6	-	-	-	-	81	112
NC Ag & Tech St U	31	2	1	1	-	1	-	9	3	6	6	8	5	1	1	-	54	85
East Tenn State Univ	31	6	1	5	-	-	1	13	-	13	5	6	-	-	-	-	80	111
Millsaps College/MS	31	5	-	5	-	1	-	8	-	8	3	12	2	-	1	-	38	69
Merrimack College/MA	30	11	-	11	-	-	-	9	1	8	-	9	1	-	1	-	23	53
Central Conn St Univ	30	8	-	8	1	-	1	5	-	5	9	6	-	-	-	-	54	84
CUNY-Bernard Baruch C	30	1	-	1	-	-	1	3	1	2	13	11	1	-	-	-	31	61

See footnotes at end of table.

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Table 17

Baccalaureate-origin institutions of 10 or more science and engineering doctorates, by major field(1): 1985-90--continued

Institution of baccalaureate	Total sci & eng	Physical Sciences			Earth/ atmos/ ocean	Math	Comp/ info sci	Agric & Biol Sci			Soc sci	Psych	Engineering(2)				Non-sci & eng(3)	Total all flds
		Sub-total	Physics astr	Chemistry				Sub-total	Agri sci	Biol sci			Sub-total	Chem	Elec	Mech		
Baldwin-Wallace C/OH	30	6	-	6	-	1	1	6	-	6	7	8	1	-	1	-	65	95
NC, U of-Wilmington	30	7	-	7	2	1	1	11	3	8	1	7	-	-	-	-	10	40
Georgia Southern U	30	5	2	3	-	-	-	4	-	4	7	12	2	-	-	1	81	111
Texas,U-Dallas	30	5	4	1	2	1	2	9	-	9	4	7	-	-	-	-	10	40
Ft Lewis College/CO	30	9	1	8	3	1	-	11	2	9	4	2	-	-	-	-	13	43
Metropolitan St C/CO	30	6	2	4	-	1	-	5	-	5	6	10	2	1	-	-	24	54
Bennington Coll/VT	29	1	-	1	-	1	-	8	-	8	7	12	-	-	-	-	34	63
Stonehill College/MA	29	4	-	4	-	-	1	9	-	9	5	9	1	-	-	1	24	53
Rider College/NJ	29	5	-	5	-	1	-	7	-	7	5	11	-	-	-	-	26	55
Susquehanna Univ/PA	29	7	-	7	3	1	1	6	-	6	4	6	1	-	1	-	26	55
Ill Benedictine Coll	29	10	2	8	-	2	-	12	1	11	-	3	2	1	-	-	12	41
Ripon College/WI	29	5	-	5	-	2	-	11	1	10	5	5	1	-	1	-	13	42
Roanoke College/VA	29	7	1	6	-	-	-	7	-	7	5	7	3	1	-	1	11	40
Virginia Military I	29	7	2	5	1	1	1	4	-	4	2	1	12	1	5	-	7	36
Central Arkansas, U	29	9	3	6	-	-	1	7	3	4	5	7	-	-	-	-	48	77
Southern Okla St U	29	16	-	16	-	-	-	9	1	8	1	3	-	-	-	-	33	62
Texas, U-San Antonio	29	4	-	4	-	-	2	10	-	10	3	10	-	-	-	-	4	33
Boise State Univ/ID	29	6	2	4	-	1	-	11	1	10	3	7	1	-	-	1	33	62
Cal St U-S Bernrdino	29	4	-	4	1	1	-	2	-	2	8	13	-	-	-	-	15	44
Pacific Union C/CA	29	3	1	2	2	-	2	7	1	6	6	7	2	-	1	-	29	58
Hartford, Univ of/CT	28	3	-	3	-	1	1	7	-	7	4	9	3	-	1	2	38	66
LIU-Brooklyn Cmps/NY	28	4	-	4	-	-	-	6	-	6	3	14	1	-	-	-	35	63
Stockton State C/NJ	28	10	4	6	4	-	-	5	-	5	2	6	1	-	-	-	10	38
E Stroudsburg U/PA	28	12	4	8	1	1	1	9	-	9	2	2	-	-	-	-	47	75
Evansville, U of/IN	28	6	3	3	-	-	-	6	1	5	4	8	4	-	1	2	31	59
Lake Forest Coll/IL	28	5	2	3	-	3	1	7	-	7	2	9	1	-	-	-	15	43
Northeastern Ill U	28	4	1	3	2	-	-	2	-	2	5	13	2	-	-	-	51	79
Coe College/IA	28	8	2	6	-	2	2	3	1	2	3	7	3	1	-	-	21	49
Frostburg St Univ/MD	28	7	-	7	-	1	-	12	2	10	2	5	1	1	-	-	44	72
Mary Washington C/VA	28	7	-	7	-	-	-	9	-	9	8	3	1	-	-	-	27	55
Whitworth Coll/WA	28	3	1	2	-	-	-	10	1	9	4	10	1	-	-	-	24	52
Point Loma Naza C/CA	28	7	1	6	-	1	-	9	1	8	2	9	-	-	-	-	21	49
Clarion U of PA	27	5	1	4	2	1	-	12	1	11	5	1	1	-	1	-	66	93
Oral Roberts Univ/OK	27	7	-	7	-	-	-	4	-	4	7	6	3	1	-	-	29	56
Gonzaga Univ/WA	27	2	-	2	1	2	-	7	2	5	8	5	2	-	-	1	41	68
Seattle Univ/WA	27	9	4	5	1	-	-	3	-	3	3	6	5	1	1	-	43	70
Clmont McKenna C/CA	27	-	-	-	1	-	-	7	-	7	10	5	4	-	-	-	17	44
St Anselm Coll/NH	26	8	-	8	-	1	-	10	-	10	4	3	-	-	-	-	33	59
Wagner College/NY	26	7	1	6	-	1	1	8	2	6	-	7	2	-	-	-	27	53
Mt Union College/OH	26	6	1	5	-	1	1	9	-	9	4	3	2	1	-	-	21	47
Augsburg College/MN	26	15	6	9	1	-	-	6	-	6	1	3	-	-	-	-	26	52
Loras College/IA	26	5	-	5	-	-	1	5	-	5	5	9	1	-	1	-	24	50
Berry College/GA	26	11	-	11	-	-	1	7	4	3	3	2	2	-	-	-	21	47
Mercer University/GA	26	4	1	3	-	1	-	5	-	5	3	13	-	-	-	-	44	70
Spelman College/GA	26	1	-	1	1	2	-	5	-	5	7	10	-	-	-	-	61	87
Rollins College/FL	26	5	2	3	1	1	-	9	-	9	3	5	2	1	-	-	22	48
David Lipscomb U/TN	26	5	-	5	1	2	1	4	-	4	4	8	1	-	-	-	47	73
Jackson State U/MS	26	4	-	4	-	-	-	10	2	8	7	4	1	-	-	-	44	70
St Marys Univ/TX	26	3	2	1	1	-	-	2	-	2	7	12	1	-	-	-	29	55
Sam Houston St U/TX	26	3	2	1	2	-	-	7	2	5	8	4	2	-	-	-	62	88
Texas Womens Univ	26	-	-	-	-	-	-	7	1	6	9	8	2	1	-	-	95	121
St Michaels Coll/VT	25	8	1	7	1	-	-	5	1	4	4	6	1	-	-	-	22	47
Bridgewater St C/MA	25	3	1	2	4	1	-	13	-	13	1	3	-	-	-	-	45	70
Framingham St C/MA	25	6	-	6	-	-	-	7	1	6	3	9	-	-	-	-	20	45
Bloomsburg U of PA	25	5	1	4	-	2	-	6	-	6	3	9	-	-	-	-	79	104
Capital Univ/OH	25	6	-	6	1	-	-	5	-	5	4	9	-	-	-	-	46	71
Hanover College/IN	25	4	2	2	1	1	-	6	1	5	3	9	1	-	-	-	30	55
Illinois Wesleyan U	25	6	2	4	-	2	-	8	-	8	2	5	2	-	-	1	47	72
Alma College/MI	25	6	2	4	-	1	-	11	3	8	3	4	-	-	-	-	23	48
Pittsburg State U/KS	25	3	1	2	-	1	1	7	-	7	4	8	1	-	-	1	67	92
St Johns College/MD	25	5	4	1	-	1	-	6	-	6	7	6	-	-	-	-	20	45
Hampton Univ/VA	25	2	-	2	-	2	-	4	-	4	5	11	1	-	-	-	73	98
Fisk University/TN	25	2	-	2	1	-	-	6	1	5	4	12	-	-	-	-	34	59
Southern Univ/LA	25	3	2	1	1	1	-	6	-	6	7	3	4	-	1	1	52	77
East Texas State U	25	6	3	3	-	-	1	4	1	3	8	5	1	-	-	-	104	129
Texas A&I Univ-Kngvl	25	2	-	2	-	-	-	5	2	3	6	6	6	2	1	1	53	78
Pace University/NY	24	8	-	8	-	1	-	6	-	6	3	6	-	-	-	-	35	59
Glassboro St Coll/NJ	24	8	-	8	-	-	-	8	-	8	2	6	-	-	-	-	59	83
St Marys College/IN	24	5	-	5	-	1	-	11	-	11	3	3	1	1	-	-	32	56
Wisconsin,U-Whitewtr	24	4	1	3	1	1	1	5	-	5	3	8	1	-	-	-	53	77
Bethel College/MN	24	5	1	4	-	-	-	3	1	2	7	9	-	-	-	-	28	52
Washburn U Topeka/KS	24	2	1	1	2	1	-	3	-	3	5	10	1	-	1	-	28	52
Randolph-Macon C/VA	24	9	1	8	-	1	-	6	1	5	3	5	-	-	-	-	8	32
Wofford College/SC	24	6	1	5	-	1	-	10	-	10	2	4	1	-	-	-	21	45
Stetson Univ/FL	24	6	1	5	-	1	-	2	-	2	5	9	1	-	-	-	62	86
Alabama,U-Huntsville	24	2	1	1	-	-	2	10	1	9	1	1	8	-	3	1	17	41
Sthrn Nazarene U/OK	24	9	5	4	1	-	1	2	-	2	3	6	2	1	-	-	26	50
Colo,U-Denver Ctr	24	5	2	3	1	2	-	3	-	3	6	7	-	-	-	-	15	39
Walla Walla Coll/WA	24	5	3	2	-	1	-	8	-	8	3	1	6	-	3	1	33	57
Cal St U-Stanislaus	24	5	1	4	-	1	-	5	1	4	6	7	-	-	-	-	18	42

See footnotes at end of table.

Table 17

Baccalaureate-origin institutions of 10 or more science and engineering doctorates, by major field(1): 1985-90--continued

Institution of baccalaureate	Total sci & eng	Major field of doctorate: Physical Sciences: Sub-total	Physical Sciences: Physics astr	Physical Sciences: Chemistry	Earth/ atmos/ ocean	Math	Comp/ info sci	Agric & Biol Sci: Sub-total	Agric & Biol Sci: Agri sci	Agric & Biol Sci: Biol sci	Soc sci	Psych	Engineering(2): Sub-total	Engineering(2): Chem	Engineering(2): Elec	Engineering(2): Mech	Non-sci & eng(3)	Total all flds
Gordon College/MA	23	4	2	2	-	2	-	6	-	6	4	7	-	-	-	-	33	56
Salem State Coll/MA	23	8	-	8	1	-	-	3	-	3	7	4	-	-	-	-	31	54
Wheaton College/MA	23	3	-	3	-	-	-	10	-	10	4	6	-	-	-	-	33	56
Rhode Island College	23	7	-	7	-	1	-	8	1	7	3	4	-	-	-	-	41	64
Kean Coll New Jersey	23	4	-	4	1	-	-	3	-	3	3	12	-	-	-	-	48	71
Muskingum College/OH	23	4	-	4	2	1	-	8	1	7	5	2	1	1	-	-	33	56
Olivet Nazarene U/IL	23	3	1	2	1	-	1	6	1	5	2	10	-	-	-	-	35	58
Carthage Coll/WI	23	7	-	7	-	-	-	3	2	1	5	7	1	1	-	-	19	42
St Norbert Coll/WI	23	5	-	5	2	2	-	5	-	5	2	6	1	-	-	-	19	42
Bethel Coll/KS	23	4	-	4	-	1	1	3	-	3	7	6	1	-	-	1	15	38
Lynchburg College/VA	23	6	1	5	-	-	-	4	-	4	3	9	1	-	-	-	18	41
Morehead State U/KY	23	2	-	2	-	-	1	6	3	3	7	7	-	-	-	-	35	58
Birmingham-Sthrn C/AL	23	6	2	4	-	-	2	4	-	4	6	4	1	-	-	-	34	57
Arkansas,U-Ltle Rock	23	5	2	3	-	-	-	8	2	6	2	6	2	-	1	-	21	44
Southwestern U/TX	23	6	2	4	1	2	-	4	-	4	2	8	-	-	-	-	14	37
Pacific Lthrn U/WA	23	6	3	3	-	1	1	4	-	4	6	3	2	-	2	-	41	64
Westmont College/CA	23	3	-	3	-	2	-	4	-	4	3	11	-	-	-	-	28	51
Whittier College/CA	23	1	-	1	1	-	-	4	-	4	2	14	1	-	-	-	40	63
Assumption Coll/MA	22	2	-	2	-	2	-	4	-	4	7	7	-	-	-	-	12	34
CUNY-York College	22	3	-	3	-	2	-	6	-	6	2	9	-	-	-	-	4	26
Hartwick College/NY	22	4	1	3	1	1	-	11	1	10	2	3	-	-	-	-	17	39
Marist College/NY	22	2	-	2	-	1	-	5	1	4	3	10	1	-	-	-	27	49
Niagara Univ/NY	22	2	-	2	-	1	1	11	-	11	4	3	-	-	-	-	28	50
Russell Sage Coll/NY	22	6	-	6	1	-	-	8	-	8	1	6	-	-	-	-	45	67
Fairlgh D-Teaneck/NJ	22	3	1	2	1	-	2	9	-	9	2	4	1	-	-	-	19	41
Lycoming College/PA	22	1	1	-	1	-	-	6	2	4	4	10	-	-	-	-	16	38
Heidelberg Coll/OH	22	2	-	2	-	1	-	9	2	7	4	3	3	-	1	1	20	42
Minnesota, U-Morris	22	10	3	7	1	1	1	5	1	4	-	4	-	-	-	-	5	27
Cornell College/IA	22	5	3	2	3	-	-	5	-	5	4	3	2	1	-	-	23	45
Drury College/MO	22	6	2	4	-	1	-	4	-	4	4	7	-	-	-	-	30	52
Maryland,U, Sch Med	22	1	-	1	1	-	-	12	-	12	4	4	-	-	-	-	38	60
Washington Coll/MD	22	6	-	6	-	1	2	2	-	2	2	8	1	-	-	-	18	40
Estrn Mennonite C/VA	22	-	-	-	-	3	-	9	3	6	4	6	-	-	-	-	19	41
Jacksonville Univ/FL	22	7	2	5	3	-	-	7	1	6	2	3	-	-	-	-	14	36
Northern Kentucky U	22	9	-	9	-	-	-	7	-	7	2	3	1	-	-	-	9	31
Austin Peay St U/TN	22	8	3	5	1	1	-	4	1	3	3	3	2	-	-	-	29	51
Tenn, U-Chattanooga	22	1	-	1	1	-	1	7	1	6	4	6	2	1	-	1	26	48
Miss Univ Women	22	3	-	3	-	1	-	7	1	6	5	5	1	-	-	-	55	77
Southeastern LA U	22	2	-	2	1	1	-	14	5	9	1	2	1	-	-	-	41	63
Colo,U-Colo Springs	22	5	1	4	-	-	1	1	-	1	9	4	2	-	1	-	9	31
Central Wash Univ	22	1	-	1	3	1	-	5	3	2	5	7	-	-	-	-	53	75
Seattle Pacific U/WA	22	1	1	-	-	-	-	7	-	7	2	10	2	-	1	-	37	59
Springfield Coll/MA	21	3	-	3	-	-	-	11	2	9	1	5	1	-	-	-	56	77
New Haven U/Conn	21	-	-	-	-	1	-	7	2	5	3	2	8	-	-	6	8	29
Calif Univ of Penn	21	4	-	4	-	-	1	7	2	5	2	6	1	-	-	-	81	102
Thiel College/PA	21	5	-	5	-	1	-	9	-	9	3	3	-	-	-	-	20	41
Westminster Coll/PA	21	5	1	4	2	2	-	3	-	3	6	2	1	-	1	-	27	48
N Park C&Theol S/IL	21	3	-	3	1	1	5	4	-	4	3	4	-	-	-	-	18	39
Rockhurst College/MO	21	7	1	6	-	-	1	6	-	6	3	4	-	-	-	-	8	29
Kearney St Coll/NE	21	5	-	5	-	-	1	7	-	7	-	8	-	-	-	-	48	69
NC, U of-Asheville	21	7	1	6	-	-	-	3	1	2	6	5	-	-	-	-	19	40
Tennessee State Univ	21	-	-	-	1	-	-	8	2	6	2	5	5	-	3	1	49	70
Univ North Alabama	21	5	-	5	1	-	-	6	2	4	4	3	2	-	-	-	34	55
Angelo State Univ/TX	21	5	2	3	-	-	1	10	3	7	2	2	1	-	-	-	12	33
CUNY-Staten Island,C	20	2	-	2	-	1	1	5	-	5	2	7	2	-	1	-	17	37
Monmouth College/NJ	20	7	1	6	1	-	-	3	-	3	-	6	3	-	3	-	23	43
North Central C/IL	20	3	-	3	-	1	1	8	1	7	1	6	-	-	-	-	15	35
WIsc, U-Parkside	20	7	-	7	-	-	-	4	-	4	3	5	1	-	1	-	10	30
Wartburg Coll/IA	20	4	1	3	1	-	-	6	-	6	2	7	-	-	-	-	17	37
NW Missouri State U	20	6	1	5	-	-	1	5	3	2	3	4	1	-	-	-	47	67
Morgan State Univ/MD	20	1	-	1	-	1	-	2	-	2	12	3	1	-	-	-	68	88
Hampden-Sydney C/VA	20	6	1	5	-	1	-	8	-	8	1	4	-	-	-	-	7	27
Alabama A&Mech U	20	3	2	1	-	-	-	11	8	3	4	-	2	-	-	1	31	51
Spring Hill Coll/AL	20	5	-	5	1	-	-	1	-	1	3	9	1	-	1	-	24	44
Nicholls State U/LA	20	2	-	2	1	4	1	6	-	6	2	4	-	-	-	-	11	31
Adams State Coll/CO	20	11	1	10	-	-	-	3	1	2	4	2	-	-	-	-	29	49
Nevada,U-Las Vegas	20	7	3	4	1	-	-	4	3	1	3	3	2	-	-	-	21	41
Willamette Univ/OR	20	6	2	4	-	-	-	3	-	3	8	3	-	-	-	-	23	43
Estrn Nazarene C/MA	19	6	1	5	-	1	-	4	2	2	1	6	1	-	-	-	13	32
Emmanuel College/MA	19	1	1	-	-	1	-	5	-	5	8	4	-	-	-	-	45	64
Marhattanville C/NY	19	3	1	2	-	1	-	2	-	2	5	7	1	-	-	-	15	34
Upsala College/NJ	19	1	-	1	1	2	-	6	-	6	1	7	1	-	-	-	20	39
Geneva College/PA	19	5	-	5	-	-	1	2	-	2	3	4	4	-	-	2	27	46
Lincoln Univ/PA	19	3	1	2	-	-	-	2	-	2	5	7	2	-	-	1	18	37
Lock Haven Univ/PA	19	1	-	1	1	-	1	9	2	7	3	4	-	-	-	-	38	57
St Vincent Coll/PA	19	4	1	3	-	4	-	3	-	3	1	7	-	-	-	-	25	44
Lewis University/IL	19	2	1	1	-	-	2	7	-	7	1	5	2	-	1	-	16	35
Michigan, U-Flint	19	5	3	2	-	2	2	6	1	5	3	1	-	-	-	-	15	34
Bellarmine Coll/KY	19	4	1	3	-	-	-	10	-	10	2	2	1	1	-	-	9	28
Carson-Newman C/TN	19	8	1	7	-	-	-	4	-	4	1	6	-	-	-	-	43	62

See footnotes at end of table.

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Table 17

Baccalaureate-origin institutions of 10 or more science and engineering doctorates, by major field(1): 1985-90—continued

Institution of baccalaureate	Major field of doctorate: Total sci & eng	Physical Sciences: Sub-total	Physical Sciences: Physics astr	Physical Sciences: Chemistry	Earth/ atmos/ ocean	Math	Comp/ info sci	Agric & Biol Sci: Sub-total	Agric & Biol Sci: Agri sci	Agric & Biol Sci: Biol sci	Soc sci	Psych	Engineering(2): Sub-total	Engineering(2): Chem	Engineering(2): Elec	Engineering(2): Mech	Non-sci & eng(3)	Total all flds
Schm Ore St Coll	19	3	2	1	2	3	1	6	2	4	3	1	-	-	-	-	23	42
Chapman College/CA	19	1	1	-	-	-	-	1	-	1	3	14	-	-	-	-	29	48
Mills College/CA	19	3	-	3	1	-	-	3	-	3	3	9	-	-	-	-	26	45
Western Conn St Univ	18	7	-	7	1	-	-	7	1	6	-	3	-	-	-	-	23	41
SUNY Empire St Coll	18	2	2	-	-	1	-	1	-	1	9	5	-	-	-	-	27	45
Ramapo C of N Jersey	18	3	1	2	-	-	-	3	2	1	1	11	-	-	-	-	7	25
Cedarville Coll/OH	18	7	-	7	-	-	-	5	1	4	1	5	-	-	-	-	21	39
GMI Engr&Mgmt I/MI	18	-	-	-	-	-	-	-	-	-	1	1	16	-	7	3	3	21
St Marys College/MN	18	3	1	2	-	-	-	11	-	11	2	1	1	-	-	-	16	34
Mollins College/VA	18	1	-	1	-	1	1	2	-	2	4	9	-	-	-	-	20	38
Wstrn Carolina U/NC	18	6	1	5	1	1	1	6	-	6	1	2	-	-	-	-	57	75
Augusta College/GA	18	2	-	2	-	2	-	9	-	9	1	4	-	-	-	-	19	37
Morehouse Coll/GA	18	3	1	2	-	2	-	3	-	3	5	4	1	-	-	-	27	45
San Diego,Univ of/CA	18	-	-	-	-	-	-	5	1	4	5	8	-	-	-	-	17	35
Catholic Univ P.R.	18	7	1	6	-	-	-	3	-	3	2	6	-	-	-	-	24	42
Goddard College/VT	17	-	-	-	-	-	-	3	-	3	3	11	-	-	-	-	22	39
Mt St Vincent,Col/NY	17	3	-	3	-	1	-	5	1	4	1	7	-	-	-	-	23	40
New Sch Soc Rsch/NY	17	1	1	-	-	-	-	3	-	3	8	5	-	-	-	-	5	22
St Rose, Coll of/NY	17	4	-	4	-	1	-	8	-	8	1	2	1	-	-	-	18	35
Elizabethtown C/PA	17	1	-	1	1	1	1	3	-	3	6	2	2	-	1	1	16	33
Kutztown Univ/PA	17	5	-	5	1	1	-	6	-	6	2	1	-	-	-	-	55	72
St Francis Coll/PA	17	4	-	4	-	1	-	8	-	8	1	1	2	-	-	-	17	34
Salisbury St Univ/MD	17	1	-	1	-	1	-	6	2	4	3	4	2	-	-	-	21	38
District Columbia, U	17	3	2	1	-	-	-	4	-	4	6	2	2	-	1	1	49	66
West VA Wesleyan C	17	3	-	3	-	-	-	8	1	7	4	2	-	-	-	-	33	50
Bob Jones Univ/SC	17	11	3	8	-	1	-	4	-	4	-	1	-	-	-	-	51	68
North Georgia Coll	17	3	-	3	-	-	-	6	-	6	1	6	1	-	-	-	21	38
Florida Southern C	17	-	-	-	-	1	1	5	3	2	3	6	1	-	-	-	36	53
North Florida, U of	17	4	-	4	-	-	-	1	-	1	2	10	-	-	-	-	15	32
Southern Col/TN	17	3	1	2	-	-	1	6	-	6	1	4	2	-	-	-	27	44
Tulane U-Newcmb C/LA	17	2	1	1	1	-	-	1	-	1	6	7	-	-	-	-	23	40
Cameron Univ/Okla	17	7	-	7	-	-	-	8	3	5	2	-	-	-	-	-	5	22
Midwestern St U/TX	17	1	1	-	-	1	-	7	-	7	1	6	1	1	-	-	37	54
Texas Southern Univ	17	5	1	4	-	1	-	5	-	5	5	1	-	-	-	-	48	65
Southern Colo, Univ	17	3	1	2	2	1	-	4	1	3	3	4	-	-	-	-	23	40
Portland, Univ of/OR	17	-	-	-	1	-	-	2	-	2	2	3	9	-	1	4	13	30
NY Inst Technology	16	6	4	2	-	1	1	-	-	-	1	6	1	-	-	1	4	20
SUNY Coll Buffalo	16	3	-	3	-	-	1	3	-	3	-	7	2	-	1	1	54	70
Ind-Purd U - Ft Wyne	16	4	2	2	1	-	1	1	-	1	4	5	-	-	-	-	14	30
Elmhurst College/IL	16	9	5	4	-	-	-	3	-	3	2	2	-	-	-	-	27	43
Lake Superior S U/MI	16	6	1	5	-	-	-	5	-	5	-	2	3	-	2	-	6	22
Northland Coll/WI	16	5	-	5	1	1	-	5	2	3	1	2	1	-	1	-	2	18
St Benedict, C of/MN	16	6	1	5	-	1	-	2	-	2	-	7	-	-	-	-	9	25
St Catherine,C of/MN	16	3	-	3	-	-	-	4	-	4	-	8	1	-	-	-	24	40
Graceland Coll/IA	16	6	-	6	-	-	-	3	-	3	2	5	-	-	-	-	14	30
Virginia State Univ	16	1	1	-	-	-	-	2	-	2	8	4	1	-	-	-	49	65
Meredith College/NC	16	1	-	1	-	-	1	4	-	4	2	8	-	-	-	-	25	41
Georgia College	16	2	-	2	-	-	-	4	1	3	2	6	2	-	-	1	37	53
Delta State Univ/MS	16	4	1	3	-	1	1	6	3	3	1	3	-	-	-	-	38	54
Mississippi College	16	5	2	3	-	1	-	3	-	3	-	7	-	-	-	-	83	99
Texas Lutheran Coll	16	7	-	7	-	-	-	7	-	7	2	-	-	-	-	-	11	27
Idaho, College of	16	3	-	3	-	-	-	10	-	10	1	1	1	-	1	-	12	28
Western St Coll Colo	16	1	-	1	3	-	-	7	1	6	2	3	-	-	-	-	24	40
Eastern New Mexico U	16	-	-	-	1	-	-	7	3	4	4	4	-	-	-	-	43	59
Scripps College/CA	16	-	-	-	-	-	-	4	2	2	2	9	1	-	-	-	23	39
St Marys Coll Calif	16	1	-	1	-	1	-	8	-	8	3	2	1	-	1	-	19	35
Eastern Conn St Coll	15	1	-	1	2	-	-	8	-	8	3	1	-	-	-	-	9	24
Mercy College/NY	15	-	-	-	-	-	1	3	-	3	2	9	-	-	-	-	9	24
Daemen College/NY	15	2	-	2	-	-	2	3	-	3	3	5	-	-	-	-	16	31
Rutgers U-Camden/NJ	15	2	1	1	-	-	-	6	-	6	3	4	-	-	-	-	8	23
Chatham College/PA	15	2	-	2	-	-	-	4	-	4	2	5	2	1	-	-	23	38
Chestnut Hill C/PA	15	4	-	4	-	-	-	3	-	3	3	5	-	-	-	-	19	34
Pittsbgh, U-Johnstwn	15	4	-	4	-	-	-	5	-	5	2	2	2	-	1	1	4	19
Aquinas College/MI	15	-	-	-	-	-	-	6	-	6	4	3	2	1	-	-	15	30
Evangel College/MO	15	-	-	-	-	-	-	1	-	1	1	12	1	-	-	-	27	42
St Marys Coll of MD	15	4	1	3	-	-	-	8	-	8	-	1	2	-	2	-	12	27
Agnes Scott Coll/GA	15	2	1	1	-	-	-	3	-	3	3	6	1	-	-	-	31	46
Tex,U-Pan Am, Edinbg	15	-	-	-	-	1	-	4	-	4	4	6	-	-	-	-	27	42
NW Nazarene Coll/ID	15	3	2	1	1	1	1	2	-	2	2	4	1	-	-	-	21	36
Linfield College/OR	15	3	1	2	-	-	-	1	-	1	6	5	-	-	-	-	13	28
Biola Univ/CA	15	2	1	1	-	-	-	1	-	1	1	10	1	-	-	-	28	43
Marlboro College/VT	14	-	-	-	-	1	-	9	-	9	-	4	-	-	-	-	8	22
St Francis Coll/NY	14	-	-	-	-	1	-	5	-	5	-	8	-	-	-	-	27	41
Syracuse U-Utica/NY	14	2	-	2	1	1	-	8	-	8	1	1	-	-	-	-	12	26
Marywood College/PA	14	1	-	1	-	-	-	6	-	6	1	6	-	-	-	-	31	45
Millikin Univ/IL	14	4	-	4	-	-	-	5	2	3	1	4	-	-	-	-	18	32
MO Western St Coll	14	9	-	9	-	-	-	1	-	1	2	2	-	-	-	-	10	24
NE Missouri State U	14	2	1	1	1	2	-	3	2	1	2	4	-	-	-	-	82	96
Webster Univ/MO	14	-	-	-	-	-	-	-	-	-	3	11	-	-	-	-	23	37
William Jewell C/MO	14	4	2	2	-	-	1	2	-	2	-	7	-	-	-	-	37	51

See footnotes at end of table.

Table 17

Baccalaureate-origin institutions of 10 or more science and engineering doctorates, by major field(1): 1985-90--continued

Institution of baccalaureate	Major field of doctorate: Total sci & eng	Physical Sciences: Sub-total	Physics astr	Chemistry	Earth/atmos/ocean	Math	Comp/info sci	Agric & Biol Sci: Sub-total	Agri sci	Biol sci	Soc sci	Psych	Engineering(2): Sub-total	Chem	Elec	Mech	Non-sci & eng(3)	Total all flds
Hastings College/NE	14	2	2	-	-	-	-	5	1	4	3	3	1	-	1	-	20	34
Benedictine Coll/KS	14	9	4	5	-	-	-	-	-	-	2	3	-	-	-	-	22	36
Bethany College/WV	14	-	-	-	-	1	-	6	2	4	4	3	-	-	-	-	11	25
NC Central Univ	14	1	-	1	-	-	-	3	-	3	7	2	1	-	-	-	57	71
Pfeiffer College/NC	14	9	2	7	-	1	-	1	-	1	1	2	-	-	-	-	15	29
Citadel, The/SC	14	4	1	3	-	1	-	3	1	2	1	1	4	-	-	-	14	28
Valdosta State C/GA	14	3	-	3	-	-	-	7	2	5	2	2	-	-	-	-	43	57
Arkansas Tech Univ	14	1	-	1	3	1	-	5	2	3	1	3	-	-	-	-	20	34
Northwest St Univ/LA	14	-	-	-	-	-	-	7	1	6	1	5	1	-	1	-	69	83
Tarleton State U/TX	14	9	-	9	-	-	-	3	2	1	1	1	-	-	-	-	11	25
Regis College/CO	14	4	1	3	-	1	-	1	-	1	2	5	1	-	-	-	9	23
U S Internatl U/CA	14	1	-	1	-	-	-	-	-	-	3	8	2	-	-	-	19	33
I Amer U-San Germ/PR	14	4	-	4	-	-	-	1	-	1	5	4	-	-	-	-	26	40
Norwich Univ/VT	13	3	1	2	-	1	-	3	-	3	-	-	6	-	3	2	8	21
CUNY-John Jay Coll	13	-	-	-	-	-	-	1	-	1	10	2	-	-	-	-	6	19
Messiah College/PA	13	1	-	1	1	-	-	5	1	4	3	3	-	-	-	-	9	22
Seton Hill Coll/PA	13	1	-	1	-	-	-	1	-	1	2	8	1	-	-	-	21	34
Widener Univ/PA	13	1	-	1	-	-	-	4	-	4	2	4	2	-	-	-	13	26
Blackburn College/IL	13	1	-	1	-	1	-	4	-	4	3	3	1	-	-	-	9	22
Rockford College/IL	13	2	-	2	-	-	-	4	-	4	4	3	-	-	-	-	16	29
Lawrence Tech U/MI	13	4	2	2	-	1	-	1	-	1	-	1	6	-	1	3	3	16
Saginaw Valy St U/MI	13	7	1	6	-	-	-	3	-	3	1	2	-	-	-	-	8	21
Winona State Univ/MN	13	3	-	3	1	-	-	7	1	6	-	1	1	-	-	-	18	31
St Ambrose Univ/IA	13	3	-	3	-	-	1	4	-	4	1	3	1	-	1	-	14	27
Emory & Henry C/VA	13	6	3	3	-	-	-	4	-	4	-	3	-	-	-	-	19	32
Centenary Coll/LA	13	4	3	1	1	-	-	4	-	4	1	3	-	-	-	-	23	36
McNeese State U/LA	13	-	-	-	-	2	-	4	2	2	3	1	3	1	1	-	25	38
Southern Utah St C	13	2	-	2	-	2	-	4	2	2	-	4	1	1	-	-	10	23
Fitchburg St Coll/MA	12	2	-	2	-	-	-	5	1	4	-	5	-	-	-	-	24	36
Elmira College/NY	12	1	-	1	-	-	1	7	-	7	1	1	1	-	-	-	24	36
Nazareth C Rochstr/NY	12	2	1	1	-	-	-	2	-	2	-	8	-	-	-	-	28	40
Wells College/NY	12	-	-	-	-	-	-	5	-	5	2	5	-	-	-	-	12	24
Ind-Purd U - Indpls	12	1	-	1	1	-	-	4	-	4	3	2	1	-	-	-	21	33
Taylor University/IN	12	3	-	3	-	-	-	1	-	1	1	7	-	-	-	-	27	39
Greenville Coll/IL	12	2	-	2	-	1	-	4	1	3	2	3	-	-	-	-	20	32
MacMurray College/IL	12	3	1	2	-	-	2	1	-	1	2	4	-	-	-	-	15	27
Monmouth College/IL	12	4	1	3	-	1	1	1	-	1	2	2	1	-	-	-	11	23
Principia College/IL	12	2	1	1	2	-	2	3	-	3	1	-	2	-	-	-	18	30
Quincy College/IL	12	2	-	2	-	-	-	1	-	1	3	6	-	-	-	-	20	32
Ferris St Univ/MI	12	2	-	2	1	-	-	5	1	4	1	2	1	-	-	-	21	33
Wisconsin,U-Superior	12	3	-	3	-	-	-	2	-	2	5	2	-	-	-	-	18	30
Stephens College/MO	12	-	-	-	-	1	-	2	-	2	1	8	-	-	-	-	18	30
Baker Univ/KS	12	4	3	1	-	1	-	4	-	4	1	2	-	-	-	-	10	22
Hood College/MD	12	1	-	1	-	-	-	5	-	5	2	4	-	-	-	-	20	32
Bridgewater Coll/VA	12	5	2	3	-	-	-	4	-	4	1	2	-	-	-	-	15	27
Sweet Briar Coll/VA	12	1	-	1	1	-	-	3	-	3	4	1	2	-	-	-	10	22
Wheeling Jesuit C/WV	12	5	3	2	-	-	-	3	-	3	-	4	-	-	-	-	15	27
Florida Ag & Mech U	12	2	2	-	-	-	-	4	3	1	3	3	-	-	-	-	49	61
Asbury College/KY	12	1	-	1	-	2	-	2	-	2	2	5	-	-	-	-	25	37
King College/TN	12	5	1	4	-	1	1	2	-	2	-	3	-	-	-	-	5	17
Troy State Univ/AL	12	2	-	2	1	-	-	3	1	2	1	4	1	-	1	-	58	70
Louisiana College	12	4	-	4	-	-	-	6	-	6	1	1	-	-	-	-	28	40
LA St U-Shreveport	12	3	1	2	-	-	1	3	-	3	-	5	-	-	-	-	8	20
St Thomas, U of/TX	12	2	-	2	1	1	-	4	-	4	-	4	-	-	-	-	13	25
Carroll College/MT	12	2	1	1	-	1	-	4	-	4	-	3	2	-	-	-	9	21
St Johns College/NM	12	1	1	-	1	1	1	2	1	1	2	2	2	-	-	-	9	21
Cal St U-Bakersfield	12	1	-	1	-	1	-	3	-	3	3	4	-	-	-	-	8	20
Cal,U-Irvine,Col Med	12	4	1	3	-	-	-	3	-	3	-	5	-	-	-	-	5	17
Alaska, U-Anchorage	12	-	-	-	-	1	-	2	-	2	4	5	-	-	-	-	8	20
Quinnipiac Coll/CT	11	-	-	-	-	-	-	8	-	8	-	3	-	-	-	-	8	19
Dowling College/NY	11	2	1	1	1	-	-	3	-	3	2	3	-	-	-	-	11	22
D'Youville College/NY	11	1	-	1	-	-	-	4	1	3	2	4	-	-	-	-	28	39
Marymount College/NY	11	1	-	1	-	-	-	5	1	4	1	4	-	-	-	-	10	21
St Josephs Coll/NY	11	2	-	2	-	-	-	3	-	3	-	6	-	-	-	-	14	25
Fairlgh D-Madison/NJ	11	3	-	3	-	-	-	4	-	4	1	3	-	-	-	-	6	17
Immaculata Coll/PA	11	3	-	3	-	-	-	3	-	3	1	4	-	-	-	-	26	37
Mansfield Univ/PA	11	5	2	3	-	1	-	1	-	1	3	1	-	-	-	-	50	61
Rosemont College/PA	11	2	-	2	-	-	-	-	-	-	2	7	-	-	-	-	11	22
Ashland Univ/OH	11	1	-	1	1	1	-	3	-	3	3	1	1	-	-	-	25	36
Otterbein College/OH	11	3	-	3	-	-	-	3	-	3	3	2	-	-	-	-	24	35
Mundelein College/IL	11	1	-	1	-	-	-	3	-	3	-	7	-	-	-	-	22	33
Adrian College/MI	11	3	-	3	-	-	-	3	-	3	-	4	1	-	-	-	17	28
Southwest State U/MN	11	2	-	2	-	-	-	4	-	4	3	1	1	1	-	-	6	17
Morningside Coll/IA	11	2	-	2	-	1	1	1	-	1	2	4	-	-	-	-	22	33
Missouri Sthrn St C	11	2	1	1	-	1	-	3	2	1	4	1	-	-	-	-	21	32
Jamestown College/ND	11	2	-	2	-	-	-	4	-	4	3	2	-	-	-	-	13	24
Doane College/NE	11	2	-	2	-	-	-	6	2	4	1	1	1	-	-	-	18	29
McPherson College/KS	11	4	1	3	-	-	-	4	-	4	1	1	1	-	-	-	7	18
Notre Dame MD, C of	11	1	-	1	-	-	1	5	-	5	1	3	-	-	-	-	18	29
Trinity College/DC	11	-	-	-	-	-	-	2	-	2	4	5	-	-	-	-	20	31

See footnotes at end of table.

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Table 17

Baccalaureate-origin institutions of 10 or more science and engineering doctorates, by major field(1): 1985-90--continued

Institution of baccalaureate	Total sci & eng	Physical Sciences: Sub-total	Physical Sciences: Physics astr	Physical Sciences: Chemistry	Earth/ atmos/ ocean	Math	Comp/ info sci	Agric & Biol Sci: Sub-total	Agric & Biol Sci: Agri sci	Agric & Biol Sci: Biol sci	Soc sci	Psych	Engineering(2): Sub-total	Engineering(2): Chem	Engineering(2): Elec	Engineering(2): Mech	Non-sci & eng(3)	Total all flds
Longwood College/VA	11	2	-	2	-	-	-	6	-	6	1	1	1	1	-	-	21	32
Radford Univ/VA	11	3	-	3	-	-	-	2	1	1	2	4	-	-	-	-	36	47
St Andrews Prby C/NC	11	3	-	3	-	1	1	3	-	3	2	1	-	-	-	-	17	28
Georgetown Coll/KY	11	3	-	3	-	1	1	4	-	4	1	-	1	-	-	-	19	30
Jacksonville St U/AL	11	4	-	4	-	1	-	1	-	1	-	5	-	-	-	-	62	73
Northeastern St U/OK	11	2	-	2	-	-	-	2	-	2	2	5	-	-	-	-	63	74
Oklahoma Bapt Univ	11	1	-	1	-	-	-	5	1	4	2	3	-	-	-	-	69	80
Oklahoma Christian U	11	1	-	1	-	-	-	4	-	4	-	5	1	1	-	-	16	27
Southestrn Okla St U	11	9	2	7	-	-	-	1	-	1	-	-	1	-	-	-	23	34
Mont C Mineral Sci&Tech	11	3	-	3	2	-	-	1	-	1	-	-	5	-	1	-	-	11
Calif Lutheran Univ	11	-	-	-	-	-	-	6	1	5	3	2	-	-	-	-	8	19
Pratt Institute/NY	10	1	1	-	-	-	-	3	-	3	3	1	2	-	1	1	12	22
Georgian Court C/NJ	10	2	-	2	-	1	-	2	-	2	3	2	-	-	-	-	15	25
Jersey City St C/NJ	10	2	-	2	-	-	-	1	-	1	2	5	-	-	-	-	44	54
Allntwn C St Fran/PA	10	4	-	4	-	-	-	4	-	4	-	2	-	-	-	-	5	15
Phil C Textil&Sci/PA	10	5	-	5	-	-	-	1	-	1	-	1	3	-	-	-	6	16
Bluffton College/OH	10	-	-	-	-	-	-	3	1	2	5	2	-	-	-	-	16	26
Central State U/OH	10	1	-	1	-	-	-	2	-	2	5	2	-	-	-	-	26	36
Mt St Jos On Ohio, C	10	2	-	2	1	-	-	3	-	3	3	1	-	-	-	-	14	24
Southern Indiana, U	10	2	-	2	-	-	-	5	-	5	1	2	-	-	-	-	1	11
St Xavier College/IL	10	1	-	1	-	1	-	-	-	-	5	3	-	-	-	-	18	28
Simpson College/IA	10	4	-	4	-	-	-	-	-	-	1	5	-	-	-	-	15	25
Maharishi Intl U/IA	10	3	3	-	-	1	-	4	-	4	-	2	-	-	-	-	4	14
Avila College/MO	10	3	-	3	-	-	-	1	-	1	2	4	-	-	-	-	11	21
Central Meth Coll/MO	10	-	-	-	-	-	-	5	1	4	4	-	1	-	-	-	12	22
Westminster Coll/MO	10	3	1	2	-	-	-	2	-	2	2	3	-	-	-	-	14	24
Minot State Univ/ND	10	3	-	3	-	-	-	2	1	1	3	2	-	-	-	-	16	26
Nebraska, U, Med Ctr	10	1	-	1	-	-	-	6	-	6	1	2	-	-	-	-	8	18
Union College/NE	10	2	2	-	-	-	-	4	-	4	1	2	-	-	-	-	16	26
Bowie State Univ/MD	10	-	-	-	-	-	-	2	-	2	4	4	-	-	-	-	19	29
Mt St Marys Coll/MD	10	1	-	1	-	-	-	6	-	6	2	-	1	-	-	1	13	23
West VA Inst of Tech	10	1	-	1	-	-	-	1	-	1	-	-	8	-	1	1	12	22
Lenoir-Rhyne Coll/NC	10	4	1	3	-	-	1	2	-	2	2	1	-	-	-	-	23	33
Erskine College/SC	10	5	1	4	1	-	-	4	1	3	-	-	-	-	-	-	13	23
Winthrop College/SC	10	-	-	-	-	-	1	2	-	2	7	-	-	-	-	-	44	54
Armstrong State C/GA	10	1	-	1	-	-	-	2	1	1	2	5	-	-	-	-	24	34
Tampa, Univ of/FL	10	2	-	2	-	-	1	4	-	4	-	2	1	-	1	-	14	24
Christn Brothrs C/TN	10	1	-	1	-	2	-	-	-	-	1	2	4	-	2	2	5	15
Samford Univ/AL	10	1	-	1	-	-	-	1	-	1	1	7	-	-	-	-	81	91
Henderson St U/Ark	10	3	2	1	-	-	-	1	-	1	1	4	1	-	-	-	32	42
Ouachita Bapt U/AR	10	3	1	2	1	-	-	5	-	5	-	1	-	-	-	-	46	56
Oklahoma City Univ	10	1	-	1	-	-	-	1	-	1	5	2	1	1	-	-	38	48
Eastern Montana Coll	10	1	-	1	-	2	-	3	1	2	2	2	-	-	-	-	11	21
N Mexico Highlands U	10	1	-	1	-	-	-	-	-	-	2	6	1	-	1	-	18	28

(1) Institutions are ranked according to the number of S/E doctorates who earned a baccalaureate in the U.S. (50 states, D.C., and Puerto Rico) and who provided data on baccalaureate institution. Baccalaureate institution was not known for 5.3 percent of S/E doctorates in 1985-90.

(2) Subtotal includes engineering fields not separately shown.

(3) Non-science/engineering doctorates in this table include doctorates who field of specialization is unclassified.

SOURCE: National Science Foundation/SRS, Survey of Earned Doctorates

Appendix C.

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Appendix C. Bibliography

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